Appendix D

Kootenai County Transportation Planning Model Report

Appendix D contains the Kootenai County Transportation Planning Model Report prepared by TModel Corporation in support of the US 95 Coeur d'Alene Corridor Plan.

Kootenai County Transportation Planning Model Report

prepared for

Idaho Transportation Department
Coeur d'Alene, Idaho

TModel Corporation
Vashon, Washington

With support from:
The Transpo Group
W&H Pacific

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Introduction

This document provides a summary of the process and the parameters used to refine the transportation model for Kootenai County, with specific emphasis on the US 95 Corridor. TModel Corporation developed this model in conjunction with ITD (Idaho Transportation Department), W&H Pacific, and Kootenai County Area Transportation Team (KCATT) member jurisdictions. The calibrated base year model is intended to represent existing conditions for July/August 2000. The calibration process will be discussed later in this document. Also discussed is the methodology used in providing forecasts for the years 2005, 2010, and 2020. The knowledge of the procedure used to develop the models and the forecasts is important for the future application of the models.

This model, for use by ITD and other KCATT member jurisdictions, is being used in the US 95 Corridor Plan to forecast future 2020 conditions and corridor improvement alternatives. It is anticipated that it will be used by jurisdictions to predict other scenarios in the future.

This model is based upon an earlier Kootenai County model developed for the KCATT study (1998). The updated model takes advantage of data refinements and improved modeling techniques. It has resulted in a model that statistically better represents the travel in the study area and therefore should more accurately forecast future conditions.

This transportation planning model is a representation of the Kootenai County roadway transportation facilities and the travel patterns on these facilities, with particular emphasis on the US 95 Corridor. The model contains inventories of the existing roadway facilities and of all housing, shopping, and employment in the area. These inventories, along with model "rules" are used to generate traffic volumes for network roadways within the model. During model calibration, these forecast volumes are compared with current traffic counts. When the model matches the traffic counts within acceptable ranges of error (to be discussed later in this document), the model can then be used to test future year scenarios. These scenarios may be changes in forecast years including number of housing units, employment quantities, travel behavior patterns, or roadway improvements. Using the model, transportation planners can project future traffic volumes to plan for facilities to meet future demand.

The Kootenai County model was developed with the updated TMODEL software package. This document details the methodology that TModel Corporation, W&H Pacific, The Transpo Group and ITD and KCATT member jurisdiction staff used to develop the model. Significantly, this model update includes better spatial definition of the transportation network, network definition, base year and forecast year land use data, and Multi-Point Assignment (MPA), which allows trips from each zone to begin and end at multiple locations in the zone to result in a more realistic assignment. Because modeling is a complex process, much of the theory, terminology, and concepts are also discussed.

The Modeling Process

A transportation planning model is constructed with the purposes of forecasting future condition traffic and operating conditions. The model is first calibrated to replicate existing base-year or known travel patterns (calibration will be discussed later in this document). The model inputs are then modified to represent future conditions, making it possible to project traffic volumes. This gives transportation planners and engineers the ability to determine the impact of different roadway or land use scenarios on the traffic network. This, in turn, allows the professional to evaluate economic decisions on potential capital improvements and then make appropriate plans. One such use of these models is to test several forecast conditions.

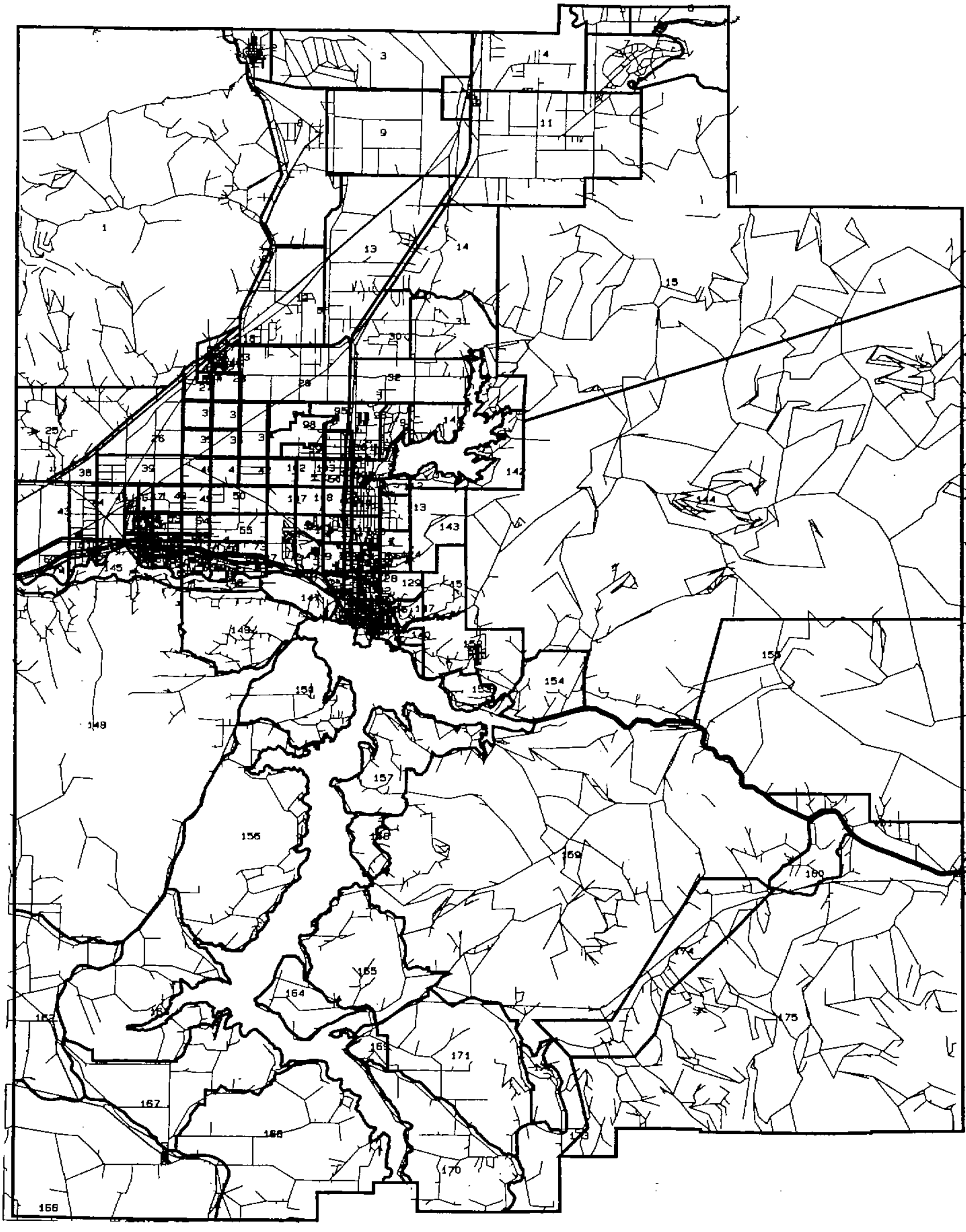
Model Area Identification

The modeling process begins by determining the area to be modeled. The Kootenai County model includes the entire county with more detail in the urbanizing area of the county. Particular emphasis was placed on the study area of the US 95 Corridor Plan. The model area is defined by traffic analysis zones. These zones are used to delineate boundaries for the collection and aggregation of demographic and employment information for the model. The Kootenai County model area with the traffic analysis zone (TAZ) structure is shown in Figure 1. The US 95 Corridor Plan area with more detail in the traffic analysis zone (TAZ) structure is shown as Figure 2. Larger plots showing the model area are included in the appendix

The Kootenai County model includes all of the roadways classified as collector or greater within the County. The original network was enhanced to include streets and roads as determined by ITD and KCATT member jurisdictions.

The model's TAZs, areas or points where trips begin and end, were determined by the previous KCATT study. The delineation of these zones was not modified from the KCATT study. Two types of zones were used: *internal and external.*

Internal zones can consist of a single parcel, a group of like land uses, or a gathering of local land uses separated by natural, physical, or political boundaries. The land use data was collected using the zone boundaries established for the countywide model. The Kootenai County model consists of 175 internal zones.



TMODEL™2

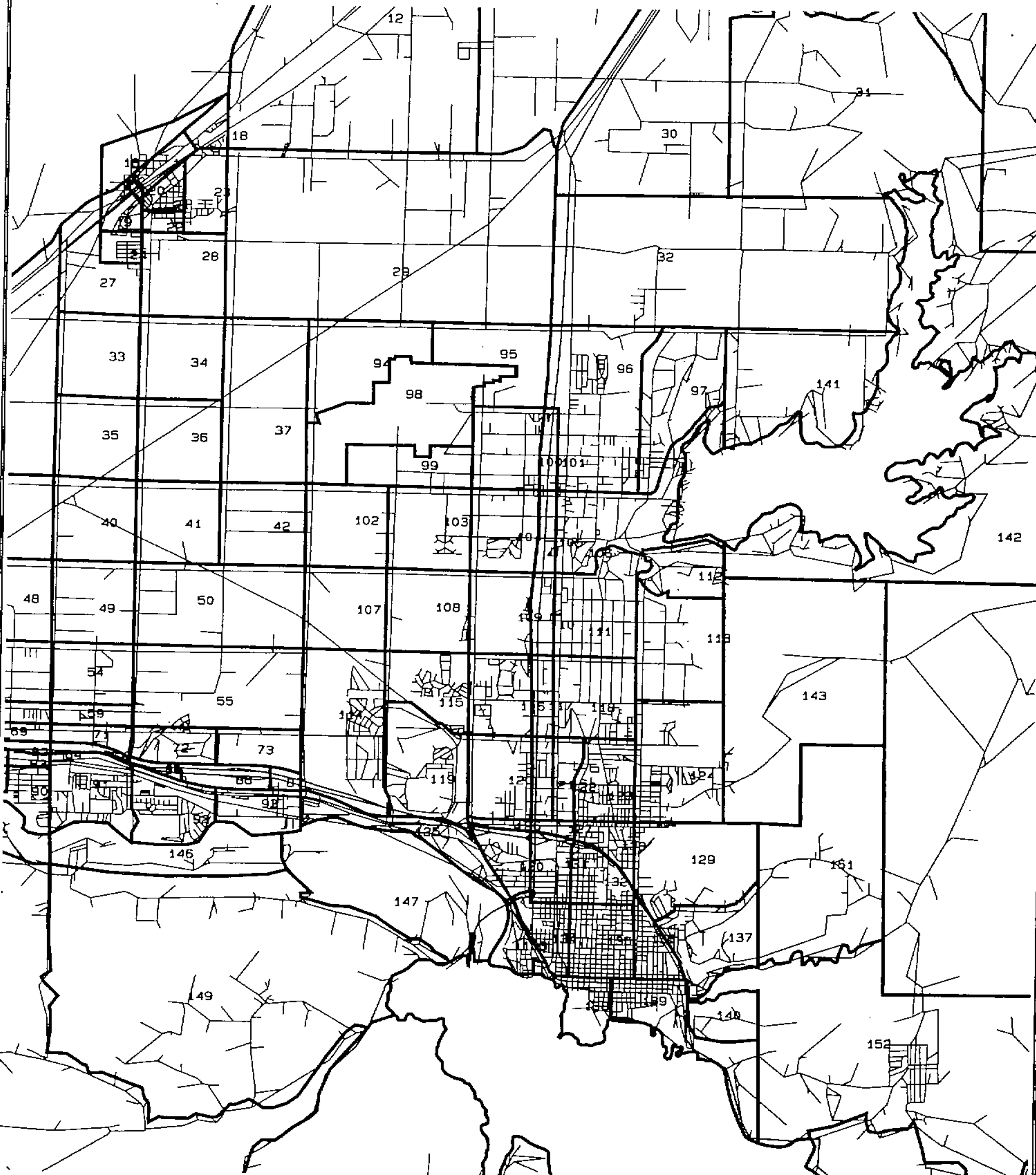
Figure 1 - TAZ Structure

Kootenai County, Idaho

TMODEL CORPORATION, VASHON ISLAND, WA

KC036.NDE

LL: 424/614
UR: 26571/31799
11-01-2001



TMODEL™2

Figure 2 - TAZ Structure

Kootenai County, Idaho

TMODEL CORPORATION, VASHON ISLAND, WA

KC038.NDE

LL: 4883/14369
UR: 13438/24312
11-01-2001

External zones account for all vehicle trips that enter and leave the model area. Depending upon the desired results, it may be logical to place an external zone on each roadway that leaves the network. In other cases, local traffic conditions may establish a need to tie together several exiting roadways into a single zone so that the external destination of the trip can be simulated. For the Kootenai County model, external zones were placed at the following locations:

External Zone	Location
176	State Hwy. 41 – N. County Line
177	US 95 – N. County Line
178	Bayview Road – N. County Line
179	E. Cape Horn Road – End
180	E. Canyon Road – East County Line
181	I-90 – E. County Line
182	Not used – Reserved for future use.
183	State Hwy. 3 – S. County Line
184	Heyburn Rd. – S. County Line
185	US 95 – S. County Line
186	W. Worley West Rd. – W. County Line
187	State Hwy. 58 (E. Hoxie Rd.) – W. County Line
188	W. Riverview Drive – W. County Line
189	I-90 – W. County Line
190	Seltice Way – W. County Line
191	State Hwy. 53 (Trent Ave.) – W. County Line

Data Collection and Coding

After the model area has been identified, the collection and entry of the necessary data to run the modeling program begins. There are two primary components to be entered: network and travel characteristics. The network data includes roadway (link), intersection (node), turn movement penalty, link delay coefficient, and node delay coefficient data. Roadway or link data includes traffic count data for links and turning movements at key intersections. Travel characteristic data includes the land use inventory, trip generation rates, external volume data (volumes entering, exiting, and traveling through the model area), and trip length frequency distributions.

Data collection for the model involves extensive fieldwork. This field work may include conducting peak-period turning movement counts, origin-destination surveys, speed-delay travel runs, and other studies used to verify the calibration of the model. ITD staff coordinated all data collection and provided the data to the consultant. For efficiency, all existing data was displayed on a series of graphic plots for each of the model attributes. These were reviewed and notes were made by all participating agencies.

Upon completion of data collection, development of the model's mathematical "rules" began by coding the information and readying it for entry into the microcomputer and TMODEL. Essentially all entered data is numeric. Each entry, such as speed limits for links, capacities for nodes, and collected land use data, is used by the model to estimate network or street volumes. The TMODEL program contains many equations and algorithms that are used in the traffic volume computation process. Therefore, given the amount of data in the transportation planning model, it is advisable to group like data together and assign uniform values. For example, link and node capacities are assumed to be uniform for links and nodes of similar classifications and areas throughout the model area. In actual practice, these capacities are considered unique to the location and road conditions. The method for developing these "blanket" values is considered part of the model's rule-building process.

Calibration

After all data has been collected, coded, and entered in the TMODEL program, the calibration process begins. In this task, the data and the model rules are refined so that the model closely simulates existing travel patterns and volumes on the roadway network. Calibration is performed by conducting a series of simulation runs and evaluating the results. The calibration is considered complete when the results of the simulation runs replicate the traffic count volumes as measured by the correlation coefficient R-squared and Root Mean Square Error (RMSE) and other measures of travel behavior.

Distribution and *assignment* are the two steps undertaken during a typical model simulation run. *Distribution* is the process of allocating trips between various zones within the network. The product of the distribution is a trip table for each trip purpose that lists the number of trips between the model's zones. TMODEL computes the distribution with the gravity model.

Application of the gravity model in transportation modeling is derived from earlier work with economic interaction through a study of social physics. The idea, simply put, is that more interactions (between different zones) take place when the cost of interacting is less. As with the physics of gravitation between masses, it has been found that many human interactions can be related to the distance or cost between interactors using a negative exponential function.

The form of gravity model used in TMODEL is:

$$\text{Trips}_{ij} = \frac{\dfrac{P_i A_j}{(d^b_{ij} + K(d^a_{ij}))}}{\sum \dfrac{A_j}{(d^b_{ij} + K(d^a_{ij}))}}$$

where:

Trips_{ij}	=	Trips between zones i and j
P_i	=	Productions (Origins) at Zone i
A_j	=	Attractions (Destinations) at Zone j
d_{ij}	=	distance between the zones
K	=	constant
a,b	=	exponents

In the *Assignment* portion of the simulation run, the distributed trips on the trip table are allocated to the shortest travel paths between each zone. The assignment of the trip tables is performed in increments. That is, portions, or slices, of the trip table from each zone are loaded on the network, one at a time. Increments of trips from all zones are assigned each increment, with all zones being treated equally. As each increment of trips is added to the network, the number of trips on each link is increased. As the numbers of trips increases, some links and nodes approach capacity. This changes the travel times on subsequent increments, or slices, and subsequently reallocates the shortest paths between the zones representing trips being diverted by traffic congestion. After the entire trip table is assigned, the accumulated trips along a link represent its assigned volume.

This model used integral distribution and assignment. These two traditionally independent steps were combined into one step. This allows the distribution to change as travel times increase between zones. Trips will distribute to other zones which are not as congested.

This model also used Multi-Point Assignment (MPA). Traditionally all trips begin or end at the zone centroid, a point in the center of the TAZ. In reality, trips begin at driveways, parking lots, and other places in the zone. MPA allows the modeler to define the access points for each zone. Typically, the number of access points ranges between two and four, but there is no limit to the number of access points. Assumed assignment points were submitted for review and revision. These were adjusted during the calibration based upon comments received and review of aerial photographs.

The series of calibration simulation runs involves review of the assumptions used to construct the model. In the distribution portion of the simulation, the exponents to the distance function of the gravity model are examined, as these exponents will impact the average length and subsequent distribution of trips in the model area. During the assignment portion of the simulation, the assumptions for link speeds, capacities, and delay parameters are studied. Between each run, different parameters are evaluated and necessary adjustments made to the "rules" so that the desired results (i.e., calibration) are reached. Before any adjustments to the Kootenai County model parameters, the parameters were justified either through the collected travel pattern data or the judgment of TModel Corporation and the study team and their experience with transportation planning models and travel conditions throughout the model area.

Model Forecasts

The fourth and final step to modeling is future scenario travel forecasting. With a working calibrated transportation planning model, different land use and/or roadway projections can be entered to produce forecast results on the roadway network. Before the actual forecast can begin, this question must be raised: Are the rules established in calibration still applicable to future scenarios?

Only professional judgment can answer this question. Most rules that are questioned will involve the roadway characteristic assumptions (speed, capacity, number of lanes, etc.) and should not require any model re-calibration. To complete the forecasts, the appropriate link, node, land use and/or through trip table file is changed by entering the future scenario data.

During forecasts, the true power of the microcomputer can be realized. The TMODEL software has sophisticated tools including the screen graphics editor that simplifies the forecast process in entry and review modes. Changes to the model files can be made for several simulation runs using various scenarios. Further, the results can be represented graphically, either on-screen or through a hard-copy plot. Emissions can be analyzed for different forecast scenarios and the implications of improvement strategies can be quantified.

After the forecast evaluation is complete, it is possible to make recommendations for the study area and test each recommendation to analyze its effectiveness on the roadway network. TMODEL can compute link volume changes due to modifications in capacity, land uses, roadways, etc. These types of tools are a valuable resource for decision-makers and transportation professionals in determining the most effective solutions for mitigating existing and potential roadway congestion.

Background Data and Modeling Assumptions

for the

Kootenai County Transportation Planning Model

The primary goal of this transportation planning model is to simulate the PM peak hour of travel on the roadway network in the Kootenai County area. In order for this simulation to be effective, it is important to obtain all transportation related data for that peak hour (a "snapshot" of time). It was also decided that the traffic model would replicate a 2000 July/August weekday evening (PM) peak-hour as this represented the typical worst case or design scenario.

The following section describes the various data used to develop the model. It is subdivided into two sections corresponding to the two primary components of a transportation planning model:

- network characteristics
- travel characteristics data.

NETWORK CHARACTERISTICS DATA

After establishing the model area, the existing model was reviewed and updated. In expanding the model, all roadways classified as collector or greater throughout the study area were included. Data is encoded to describe both the links and the nodes. A link is a vector (line) that describes connectivity between two nodes. A node is an end point of a link. Typically, a node can be an intersection or an intermediate point between intersections and a link is a section of roadway.

Roadway (Link Data)

Each street in the model is represented by a link or a group of links. Each link contains attribute data that defines the operation of that link. A link is a directional description of connection between beginning and ending node points. Data attributes included in a link file (.LNX) in TMODEL include:

- Classification (user-specifiable)
- Area (user-specifiable)
- Type (user-specifiable)
- One- or Two-way Direction
- Number of Lanes
- Capacity
- Length
- Design Speed (or posted speed limit)
- Volumes

Link Classification

The numeric codes for link classification used in the link file are listed in Table 1. Link classifications were used to define link capacities and to set the speed-delay functions used in the simulation process. W&H Pacific, The Transpo Group, ITD, and the KCATT member jurisdictions provided classification data.

Table 1
Link (Roadway) Class
2000 Kootenai County Transportation Planning Model

Class Number	Facility Type
1	Freeway
2	Ramps
3	Principal (Major) Arterials
4	Minor Arterials
5	Collectors
6	Minor Collectors
7	Local Street
10	Centroid Connector
11	Future Roadways

Link Area
The link area was used to designate areas as Urban or Rural. The network links to be designated for Urban and Rural were determined by the KCATT study group. All links that are Urban are designated as Area 1 and all links that are Rural are designated as Area 2.

Link Type
Link type codes were not used in the Kootenai County model. These codes may be used to define specific segments for summary statistics. This field can be used for future purposes. Subsequent to the development of the model, this field was used to code links in the US 95 Corridor for compilation of summary statistics. A code of "1" was used to denote links in the US 95 Corridor.

One- or Two-way Direction
All links were checked for proper one- or two-way entry. A one-way link is entered in TMODEL by entering a '1' in the one or two-way ("12 Way" in TMODEL Network Graphics Editor/Reporter (NGE)) column. All two-way links receive a '2.' In future updates, it is important that the user have the direction appropriately entered with the proper A (origin) and B (destination) node columns in the Network Graphic Editor.

Number of Lanes
This attribute is used to assign capacities to network links. This field is not used during the TMODEL distribution and assignment simulations, however, it is important for assigning capacities to network links. It is also used for display and in some network calculator functions. Plots of numbers of lanes were supplied to all involved agencies for review. Where different numbers of lanes for each direction were supplied, the links were coded as individual one-way links with the appropriate coding. Caution should be used when coding forecast revisions to insure that changes are made appropriately. All model links were checked for accuracy with this designation.

Capacity
Capacity is entered in terms of vehicles per hour (vph) for each link, directionally. Due to the number of links contained in the Kootenai County model, it wasn't possible to complete individual capacity analyses on each link to find suitable capacities. Therefore, a macro link capacity system was adopted. The capacities were based upon Special Report 209 "Highway Capacity Manual," Transportation Research Board, National Research Council, Washington, D.C. 1985, the previous Kootenai County model and TModel Corporation experience with other models. Capacities were established for each link classification using the Urban and Rural Area type designations.

In the context of model operation, the capacities are used in conjunction with link speeds, link lengths, and speed-delay functions to derive a realistic travel speed to be used in the distribution of travel and the derivation of appropriate travel routes. In the context of network analysis, the capacities are used to identify deficiencies and recommend improvements. In both cases, it is desired that the capacities used in the model be as accurate and realistic as possible. Table 2 represents the capacities used for the model.

Table 2
Link (Roadway) Class/Area/Capacities
2000 Kootenai County Transportation Planning Model

Class Number	Facility Description	Area 1 Urban Capacity (vphpl)	Area 2 Rural Capacity (vphpl)
1	Freeway	2000	1800
2	Ramps	1500	1000
3	Principal (Major) Arterials	1500	1200
4	Minor Arterials	1200	1000
5	Collectors	1000	800
6	Minor Collectors	800	600
7	Local Street	600	400
10	Centroid Connector	1000	1000
11	Future Roadway	1	1

A supplemental file was created with the extension of .LDE, which contains Link Data Equations. This file was used to compute the link capacities of all links using the Class and Number of Lanes columns. This feature is found in TMODEL section 1.7.1.

Length
In TMODEL, all lengths are automatically calculated. The program will calculate lengths for each link during data entry and any subsequent future modifications. For geographic and spatial reference the 1999 Census TIGER files were imported into TMODEL Layer (.LYR) file format. The network from the previous KCATT model was registered to this new coordinate system. An appropriate scale factor was derived that corresponds to the distances and the coordinate system used. Links and nodes were moved to correspond to the proper geographic locations and new link lengths were computed for all links. After the

link lengths were calculated for the Kootenai County model, link lengths were checked to confirm that the function and the chosen scale factor was working properly. The model scale in units of coordinate points per mile is set in section 1.3.2. This assures that whenever a link is added or a node is moved in the Network Graphic Editor, the link length will be recalculated using this scale.

Design Speed

Link speeds are entered in TMODEL in miles per hour. Speeds have a direct influence on the computation of travel times during simulation runs. Generally, posted speed limits are entered into the program during the initial data entry phase. However, posted limits do not always accurately depict the free-flow conditions on the roadway. For example, some state highways have speed limits that may be less than the design speeds and these speed limits are not obeyed. Conversely, some locations may have posted limits greater than what can be achieved (e.g., arterials in fully developed areas with numerous driveways and signalized intersections). During the model update process, plots of coded speeds were distributed to all involved agencies for review and comment. Changes were made to all links noted on the plots.

During the calibration process, roadway operating speeds from the model were reviewed to justify modifications to the posted speed limit coded in the model as well as model node capacities and link and node delay coefficients. Very few link speeds were modified during calibration.

Link Delay Coefficients

Travel time on each individual link typically increases as the traffic volume on the link approaches capacity. Current research has shown that the amount of travel time increase depends on the functional classification of the link as well as the region and the behavior of the drivers using that link. TMODEL offers the ability to adjust the travel time increases on the link as the volume-to-capacity (V/C) ratio changes by functional classification of the link. This feature was used during the calibration process.

During calibration analysis, both link operating speeds and total (including both link and node delays) operating speeds can be analyzed. This differential analysis is used to adjust both the link and node delay coefficients. The final values used in the model calibration are shown in Table 3. Note that Class 10 (centroid connectors) and Class 11 (future) use equations that do not add travel time based upon congestion. This is because the centroid connectors and future connections are not representing real streets.

Table 3

Link Delay Coefficients

2000 Kootenai County Transportation Planning Model

	V/C # UL				V/C > UL		
Link Class	K1A	EA	K2A	UL	K1B	EB	K2B
1	0.25	4.0	0.15	0.85	0.25	10.0	0.15
2	0.25	4.0	0.15	0.85	0.25	10.0	0.15
3	0.25	4.0	0.25	0.75	0.25	10.0	0.25
4	0.25	4.0	0.25	0.75	0.25	10.0	0.25
5	0.25	4.0	0.25	0.75	0.25	10.0	0.25
6	0.25	4.0	0.25	0.75	0.25	10.0	0.25
7	0.25	4.0	0.25	0.75	0.25	10.0	0.25
10	0	0.01	0	0	0	0	0
10	0	0.01	0	0	0	0	0

Link Travel Time = Base Time * (1 + (K1A * $((V/C)+K2A)^{EA}$)) when V/C # Upper Limit (UL) otherwise Link Travel Time = Base Time * (1 + (K1B * $((V/C)+K2B)^{EB}$)).

Note: Time in minutes.

Intersection (Node) Data

The beginning and end points of each link are called nodes. A node can be an intersection, a zone centroid, or an intermediate point between intersections. In TMODEL, all nodes are coded with data that define the operating characteristics of that node. Data needs for node files in TMODEL include the following:

- Classification (user-specifiable)
- Area (user-specifiable)
- Type (user-specifiable)
- Capacity
- Special Delay Links (SDLs)
- Base Delay

Node Classification

The node classifications were coded in the model dependent upon the intersection control. Delay equations are defined by node class, so it is important that the node class is properly coded. Table 4 lists the node classifications used in the 2000 Kootenai County model. These were refined during the model calibration process.

Table 4

Node (Intersection) Classification

2000 Kootenai County Transportation Planning Model

Node Class	Description
1	Shape Nodes
2	Centroid Connector Intersection
3	Zone Centroid (Internal Zone)
4	Zone Centroid (External Zone)
5	Ramp Diverge
6	Ramp Merge
7	At-Grade Rail Crossing (UPRR – 5-7 Trains/Day)
8	At-Grade Rail Crossing (BNSF – up to 70 Trains/Day)
9	At-Grade Rail Crossing (Spur – several Trains/Week)
10	All-Way Stop Control
11	Partial Stop Control
12	Yield Control
13	Uncontrolled Intersection
20	Signalized Intersection
21	Traffic Circle
22	Pedestrian Only Signal or Mid-block Crosswalk with large volume
99	Future Intersections

Node Area

Node Area attributes were coded by sequential numbering to identify locations where existing intersection turning movement counts were collected. These intersection locations were saved for model output turning movements to assist in the model calibration validation. Turn movement locations coded in the Area field were US 95 at:

1 - Government Way
2 - Hayden Ave
3 - Prairie Ave
4 - Canfield Ave
5 - Hanley Ave
6 - Dalton Ave
7 - Kathleen Ave
8 - Bosanko Ave
9 - Neider Ave
10 - Appleway Ave
11 - I-90 WB Ramps
12 - I-90 EB Ramps
13 - Ironwood Drive
14 - Honeysuckle Ave

Node Type

Node type has been used to designate the node capacity equations for computation of the node capacities. The node type system closely follows the link functional classification system. Node types have been grouped to show whether the intersection represents an arterial meeting an arterial, an arterial meeting a collector, etc. Table 5 lists the node types.

Table 5

Node Type and Capacities

2000 Kootenai County Transportation Planning Model

Node Type	Node Description	Node Capacity Equation (vph) $C = K^1 + K^4 * \text{(Ent. Capacity)}$	
		K^1	K^4
1	Shape Nodes		1.00
2	Centroid Connector Intersection		1.00
3	Zone Centroid (Internal Zone)		1.00
4	Zone Centroid (External)		1.00
5	Ramp Diverge		1.00
6	Ramp Merge	-1500	1.00
7	At-Grade Rail Crossing (UPRR - 5-7 Trains/Day)		0.95
8	At-Grade Rail Crossing (BNSF - up to 70 Trains/Day)		0.90
9	At-Grade Rail Crossing (Spur - several Trains/Week)		0.95
20	Equal Entering Link Classes		0.40
21	Intersection with 1 link class lower		0.45
22	Intersection with 2 link classes lower		0.50
23	Intersection with 3 link classes lower		0.55
24	Intersection with 4 link classes lower		0.60
25	Intersection with 5 link classes lower		0.65
30	Equal Entering Link Classes (3-Legs)		0.45
31	Intersection with 1 link class lower (3-Legs)		0.50
32	Intersection with 2 link classes lower (3-Legs)		0.55
33	Intersection with 3 link classes lower (3-Legs)		0.60
34	Intersection with 4 link classes lower (3-Legs)		0.65
35	Intersection with 5 link classes lower (3-Legs)		0.70
99	Future Intersection		1.00

Because of the mix between the link classifications, a key was established to more readily determine the node type to be used based upon entering link classifications. The node type key is shown in Table 6.

Table 6

Node Type (specific)

2000 Kootenai County Transportation Planning Model

Link Class	1	2	3	4	5	6	7	10	11
1	1	6	21	22	23	24	25	2	99
2	6	6	20	21	22	23	24	2	99
3	31	30	20	21	22	23	24	2	99
4	32	31	31	20	21	22	23	2	99
5	33	32	32	31	20	21	22	2	99
6	34	33	33	32	31	20	21	2	99
7	35	34	34	33	32	31	20	2	99
10	2	2	2	2	2	2	2	2	2
11	99	99	99	99	99	99	99	2	1

Note: Use node types 30-33 for 3-leg intersections.

Node Capacity

Capacities at all nodes are required in TMODEL to compute delays based upon traffic congestion at the intersections. The program has the ability to model delay at intersections. This feature has been incorporated into the Kootenai County model so that delays at these critical points on the network can be modeled to reflect the impacts upon traffic flow patterns.

For the Kootenai County model, TMODEL calculates preliminary node capacities using the following node equation:

$$Cap. = K_1 + K_2(No.\ of\ Lanes) + K_3(No.\ of\ Lanes)^{E3} + K_4(Entr.\ Cap.) + K_5(Entr.\ Cap.)^{E5}$$

where:

Cap.	=	Intersection Capacity
K_i	=	Constant
E_i	=	Exponent
No. of Lanes	=	Number of Entering Lanes from all links entering the node
Entr. Cap.	=	Sum of Entering Capacities from all links entering the node

Node capacities for the Kootenai County model used the K_4 constant. K_4 was used to simulate the effect that a green time-to-cycle length (G/C) ratio has at an intersection. For modeling purposes, it was assumed that when like classes meet, the G/C ratio is fairly even, and as the roadway meets lesser class roadways, the green time, or G/C ratio, increases on the major facility.

For intersections that are 3-legged, the capacities were increased due to the reduced number of conflicting turns and increased G/C ratio as compared to 4-legged intersections. The K_4 values on the 3-legged intersections were increased by 0.05 from the equivalent classified 4-legged intersection. Table 5 lists the constants for the TMODEL node capacity equations.

Special Delay Links (SDLs)

Another feature in TMODEL is the ability to model intersections under STOP or YIELD control. Special Delay Links (SDLs) at a node denote which link(s) are under two- or three-way STOP or YIELD control. If an intersection is a four-way STOP, then no SDLs are entered, because node delay is applied equally to all approaches.

SDLs are applied during the assignment phase in TMODEL simulation modules. As traffic is loaded onto the network, the program calculates Volume-to-Capacity (V/C) ratios at each node. Intersection delay is calculated using the V/C ratio (more on how the program calculates the delay is presented in later sections of this report). If SDLs are specified at the nodes, then any delay calculated during the simulation run is assigned to the special delay link(s) approaching the node to simulate a STOP or YIELD condition. Under a four-way STOP condition, delay is experienced on all four legs and no SDLs are entered for this condition. SDLs were placed at all partial way stop signs. SDLs were also used on centroid connector links at the intersection with the model network.

Base Delay
Additional delay can be added to an intersection if a known condition exists. These conditions could include an all red condition at a signal, pedestrian phases, or a node representing significant delays at railroad crossings. In the Kootenai County model, no additional node delays were used.

Turn Penalty Files
At some locations on a network it may not be possible to execute a certain turn movement, there can be a capacity constraint due to the drivers' perceptions of potential safety concerns, or it is desired to restrict movements through a zone centroid. A supplementary file, the Turn Penalty File (.TNP), is available to TMODEL users to simulate these conditions. Within the Kootenai County model, turn penalties were used to restrict travel through zone centroids that were not on the roadway network, and to penalize left turns through the network. Additional delays were assigned at left turn movements at all signalized intersections. These additional delays improved model operation to eliminate any excessive "stair-stepping" movements. The turn penalty types are shown in Table 7.

Table 7
Turn Penalty Types
2000 Kootenai County Transportation Planning Model

Type Number	Penalty Description	Penalty (Minutes)
1	Zone Centroid	30
2	Left Turn at Signals (Node Class 20)	0.10

In addition, left turn penalties at Signals (type 2) have penalty time added based upon the volume of traffic making the turn. The additional delay is computed as $0.50*(V/250)^4$. Where V is the volume of the traffic making the left turn. It is important to place these turn penalty delays at any locations in the forecast network that have changed conditions. After all new zone centroid and other turn penalties have been added it is recommended that turns be recomputed for all nodes of class 20. The Turn Penalty module sort/check routine should be used to automatically remove redundant penalties.

Node Delay Coefficients
The delay caused by different classifications of intersection control must be defined to reproduce the delays that drivers perceive. The resultant extra travel time is dependent upon the volume-to-capacity ratio (V/C) and varies by class of the nodes. The final values used are shown in Table 8.

Table 8

Node Delay Coefficients

2000 Kootenai County Transportation Planning Model

	V/C # UL					V/C > UL			
Node Class	K1A	EA	K2A	BDA	UL	K1B	EB	K2B	BDB
1	0	1	0	0	0	0	0	0	0
2	0	1	0	0	0	0	0	0	0
3	0	1	0	0	0	0	0	0	0
4	0	1	0	0	0	0	0	0	0
5	0	1	0	0	0	0	0	0	0
6	0.50	3.8	0.15	0	0.85	0.50	5.8	0.15	0.00
7	0.50	3.8	0.15	0	0.85	0.50	5.8	0.15	0.00
8	0.50	3.8	0.15	0	0.85	0.50	5.8	0.15	0.00
9	0.50	3.8	0.15	0	0.85	0.50	5.8	0.15	0.00
10	0.50	3.6	0.20	0.05	0.80	0.50	6.0	0.20	0.05
11	0.50	3.6	0.20	0.10	0.80	0.50	6.0	0.20	0.10
12	0.50	3.6	0.20	0.05	0.80	0.50	6.0	0.20	0.05
13	0.50	3.6	0.20	0.05	0.80	0.50	6.0	0.20	0.05
20	0.50	3.6	0.20	0.02	0.80	0.50	5.0	0.20	0.02
21	0.50	3.6	0.20	0	0.80	0.50	6.0	0.20	0
22	0.50	3.6	0.20	0.05	0.80	0.50	6.0	0.20	0.05
99	0	1	0	0	0	0	0	0	0

LAND USE AND TRAVEL CHARACTERISTICS

The central point of each traffic analysis zone (TAZ), where trips begin and end on a transportation planning model network, is called a zone centroid. In TMODEL, these centroids are also nodes in the model network. Zone centroids are at the center of a zone, which consist of a variety of land uses bounded by either the roadway network or other geographic or municipal boundaries. A plot of the TAZ boundaries is shown as Figure 2. A large plot of these boundaries is also provided in the appendix.

The Kootenai County model consists of two zone types: internal and external. Internal zones were those zones within the model area. Internal zones have associated land use data that are used to generate origins and destinations. External zones were placed along roadways entering and leaving the Kootenai County model area. Land use is not associated with external zones; the traffic volumes coming in and out of the area are used to describe the origins and destinations for these zones.

TMODEL requires that the beginning node numbers correspond to zone centroids and that the numbering be consecutive. Zone numbering for the Kootenai County model is:

1 to 175	Internal Zones - representing the model area.
176 to 191	External Zones - representing the entry/exit points from the model area.

Internal Zone Data
Land use data was collected and collated by W&H Pacific and Intermountain Demographics. ITD staff reviewed this land use data. Land use data questions that arose during the calibration stage of model development were reviewed and adjusted as necessary by W&H Pacific and Intermountain Demographics. During the TMODEL training sessions it was decided to divide the Single Family Residential category based upon the proximity of the zone to the Coeur d'Alene urban area. All land use data was summarized into the following:

LU1 **Single Family Residential** includes those lands occupied by a single family home, duplex, or a manufactured home on a single lot. During calibration, this category was divided and single family uses in other zones were moved to Land Use category LU9 - Outer SFDU. Measured in dwelling units.

LU2 **Multi-Family Residential** uses contain five or more residential units on a parcel of land. Also, this category includes mobile home parks, apartment buildings, and condominiums. Measured in dwelling units.

LU3 **Retail** includes a broad range of establishments which sell goods directly to the general public, such as general commercial, restaurants, automotive dealers, home furnishings, food stores or other products. Measured in employees.

LU4 **Office** includes banks or other financial institutions, real estate and insurance offices, personal services, business services such as advertising, health care, legal services and other assorted services. Measured in employees.

LU5 **Industrial** includes a broad range of general or specialty contractors: the production of food, textile, wood, furniture, paper, printing, metal, machinery, electrical and other products; and also includes transportation, communication and public utilities, such as railroads, trucking and warehouse, air transportation, pipelines, communication towers and electrical, gas and sanitary services. Measured in employees.

LU6 **Schools** are measured in numbers of students. This was revised during the calibration to include only elementary through high school students. Although the model is designed to represent the July/August period, it was believed that significant activities still occur at the schools during this time. A lower trip generation rate was used to replicate this behavior.

LU7 **Hotel/Motel** includes all hotels and motel establishments in the county. These were measured in number of hotel or motel rooms.

LU8 **Campgrounds** includes organized camping areas in the county. These were measured in numbers of spaces.

LU9 **Outer Single Family Residential** includes those lands occupied by a single family home, duplex, or a manufactured home on a single lot outside the urban area. Units from classification LU1 were moved to this category for zones 1-15, 31, 142, 144, 148, and 150-175. ITD staff determined the selection of these zones. Measured in dwelling units.

LU10 **College and University** includes students and colleges and universities in the county. These are measured in numbers of students.

All inputs were checked and reviewed using the land use viewer capabilities of TMODEL. These same categories were also used for the model forecasts. A printed listing of the land use is provided in the appendix.

Trip Generation

After the collected land use data was allocated to the model zone system, the number of trips generated by each zone was calculated. This procedure, called trip generation, is a compilation of several mathematical formulas that determine the number of trips produced and attracted to each model zone.

Many transportation engineering projects use the Institute of Transportation Engineer's (ITE) *Trip Generation* report to determine trip generation for proposed projects. Research by ITE has established a series of trip generation rates that, when multiplied by amount of proposed development (e.g., number of dwelling units, employees of commercial or industrial, etc.), produce an estimate of the total number of vehicle trips entering or exiting the development.

While the above application is suitable for many traffic engineering projects, modeling uses a more disaggregate trip generation approach. When a trip distribution model (such as the one used in TMODEL) is applied to origins and destinations, different trip *purposes* exhibit different travel *characteristics*. For example, the characteristics of a home-to-work trip are different from a home-to-shopping trip. If trip generation estimates were made simply following just the ITE rates, no distinction could be made.

Therefore, it is important that the model generate different trip productions (origins) and attractions (destinations) for different trip purposes so that different travel characteristics can be accounted for in the gravity model.

In its NCHRP report 187, the Transportation Research Board (TRB) describes a methodology for trip generation that includes the following trip purposes:

- Home-Based Work (HBW) trips,
- Home-Based Other (HBO) trips, and
- Non-Home-Based (NHB) trips.

These three trip purposes are typically used with most daily transportation models. Because of the spatial structure of the Kootenai County model, it was decided to disaggregate the trip purposes. The Home-Based Work trips were divided into trips between Home-to-Work and Work-to-Home. The Home-Based Other trips were divided into trips between Home-to-Other and Other-to-Home. By splitting the HBW and HBO trip purposes into their components, this eliminated the possibility of a problem of excessive trips between households. Therefore five trip types were used:

- Home to Work (HW) trips,
- Work to Home (WH) trips,
- Home to Other (HO) trips,
- Other to Home (OH) trips, and
- Non-Home-Based (NHB) trips.

TModel Corporation developed the following trip generation factors for use in the model. The base trip generation rates were taken from ITE's *Trip Generation Report*. Factors used to separate the trips into the five purposes and origins-destinations were from NCHRP report 187 and experience by TModel Corporation.

Trip generation rates are set at values during the beginning calibration simulations. As the calibration process is conducted, adjustments are made to the rates to better reflect the known (or base-year) travel conditions. Generated trips are compared with traffic count volumes and modified to match these volumes as closely as possible. Table 9 presents the final calibrated trip generation rates used for the weekday evening peak hour model.

Table 9

Trip Generation Rates

2000 Kootenai County Transportation Planning Model

	Land Use	Trip Purpose										Total PM Peak Hour Trips Generated		
		HW		WH		HO		OH		NHB				
		Orig.	Dest.	Orig.	Dest.	Orig.	Dest.	Orig.	Dest.	Orig.	Dest.	Orig.	Dest.	Total
1	Single-Family	0.055	0.000	0.000	0.226	0.184	0.000	0.000	0.267	0.067	0.101	0.306	0.594	0.900
2	Multi-Family	0.031	0.000	0.000	0.144	0.102	0.000	0.000	0.171	0.038	0.065	0.171	0.380	0.550
3	Retail	0.000	0.094	0.135	0.000	0.000	0.328	0.347	0.000	0.482	0.515	0.963	0.937	1.900
4	Office	0.000	0.013	0.139	0.000	0.000	0.030	0.095	0.000	0.082	0.040	0.316	0.084	0.400
5	Industrial	0.000	0.009	0.140	0.000	0.000	0.019	0.095	0.000	0.083	0.024	0.318	0.052	0.370
6	Schools	0.000	0.001	0.006	0.000	0.000	0.010	0.011	0.000	0.014	0.017	0.031	0.029	0.060
7	Hotel/Motel	0.035	0.022	0.035	0.045	0.000	0.045	0.035	0.000	0.246	0.336	0.352	0.448	0.800
8	Campgrounds	0.004	0.012	0.008	0.012	0.000	0.025	0.008	0.000	0.062	0.198	0.0083	0.248	0.330
9	Outer SFDU	0.022	0.000	0.000	0.126	0.050	0.000	0.000	0.135	0.028	0.039	0.100	0.300	0.400
10	College/University	0.000	0.004	0.015	0.000	0.000	0.010	0.021	0.000	0.024	0.026	0.060	0.040	0.100

In Table 10, a comparison is made between the generation rates used in the Kootenai County model and ITE *Trip Generation Report*. Employment designations are hard to match with descriptions from the more detailed ITE classification system. The closest available description was used for the land use classifications.

Table 10
Trip Generation Rate Comparison
2000 Kootenai County Transportation Planning Model

Land Use		Rates used in the Model			ITE Rates		
		Orig	Dest	Total	Orig	Dest	Total
1	Single-Family	0.306	0.594	0.900	0.36	0.65	1.01
2	Multi-Family	0.171	0.380	0.550	0.20	0.42	0.62
3	Retail	0.963	0.937	1.900	1.55	1.53	3.08
4	Office	0.316	0.084	0.400	0.38	0.08	0.46
5	Industrial	0.318	0.052	0.370	0.42	0.06	0.48
6	Schools	0.031	0.029	0.060	0.085	0.075	0.16
7	Hotel/Motel	0.352	0.448	0.800	0.38	0.08	0.47
8	Campgrounds	0.083	0.248	0.330	N/A	N/A	0.39
9	Outer SFDU	0.100	0.300	0.400	0.36	0.65	1.01
10	College/University	0.060	0.040	0.100	0.15	0.06	0.21

Model rates are comparable but slightly different than ITE rates. Reasons for these differences can be occupancy or, conversely, vacancy, the aggregation of distinct land use types into more general categories, and local variations. Retail rates are based upon a medium size shopping center. Typically a smaller retail establishment will have a higher trip generation to employee ratio than a large shopping mall.

In addition, the ITE national average, or NCHRP 187 rates, assumes the same trip generation rates at each development. During the actual system peak hour, this is not necessarily the case. For example, one industrial development or office may dismiss their employees during the peak hour, while another, located elsewhere in the model area, will have a slightly earlier (or later) discharge time. Rates were adjusted based upon review of the model calibration.

The factors were applied to the collected land use information and stored in the origin-destination files in TMODEL. These files contain the origins and destination values for all trips generated by all land uses and external zones.

External Zones

Origin and destination totals for external zones were set at the base-year peak-hour traffic volumes. As with internal zones, traffic generated externally is also apportioned among different trip purposes. Trips generated by external zones fall into two categories. Traffic that travels from external zone to external zone, or through the network, is called a through trip. These movements are designated as X-X trips in TMODEL, which stands for eXternal to eXternal travel. The primary characteristic of these trips is that they travel through the network but do not stop or start within an internal or perimeter zone. In the Kootenai County model the best illustration for this movement is a trip that starts in Spokane and ends in Bonner County without making a stop in the Kootenai County model area.

The second trip type generated by an external zone is the one that begins at an internal zone and ends in an external zone, or vice versa. The movement from Spokane to Coeur d'Alene can illustrate these trips, often designated as I-X and X-I trips (for Internal to eXternal, eXternal to Internal).

Trip distribution is typically only performed for I-I (Internal-Internal), I-X, and X-I trips. The remaining X-X trips are placed in a trip table. This trip table, listing the number of direct movements between zones, is a manual distribution of the X-X traffic based upon some known parameters. External-external traffic is difficult to simulate (or in this case, distribute) with the gravity model. Therefore, the modeling process with TMODEL includes a step for "manually" distributing X-X traffic to the external stations.

Total external trips were derived from the traffic counts supplied with the 1998 Kootenai County model. These were reviewed during the TMODEL training sessions and also compared with data supplied by the Spokane Regional Transportation Council (SRTC). External-external trips were also reviewed during these sessions. Revisions were made based upon comments received from the reviewing agencies.

Movements were also compared with the license plate study conducted as a part of this project. The license plate study matched points within the study area, not just on the externals. During the course of the calibration, the movements between the license plate study locations were compared with the model outputs to insure consistency. The model appears to be replicating the observed behavior.

The X-X trips were placed in a through trip table. The remaining trips associated with the external zone's I-X and X-I movements were combined with the model's origin-destination file for the simulation runs. The simulation run module used in TMODEL automatically adds the manually distributed X-X trips to the trip table created from the origin-destination file during the gravity model distribution process. This is part of TMODEL's auto-external zone calibration process for simulation runs.

Combine Origin-Destination File and Balance

Data from the external traffic zones were combined with the internal zone trips to form a complete origin-destination file for the Kootenai County model. After the I-X and X-I trips were added, origin and destination sums by trip purpose were checked for equivalency with the trip generation spreadsheet and the "check sum" utility in TMODEL's origin-destination editor. The primary purpose for checking equivalencies was to ensure that for each origin generated by the model there was a destination. (Transportation planning models are closed systems, meaning that every trip on the network must have an origin and a destination.)

A trip generation rates strategy such as the one used to develop the Kootenai County model internal zone traffic does not always produce balanced origins and destinations. For example, trip generation assumes that every business within the same retail category has the same trip generating characteristic. Retail land uses include different types of development ranging from department stores to restaurants. Furthermore, had a single land use been assumed, such as grocery stores, the departure rates during the PM peak hour would vary from development to development. Therefore, with the methodology there is some difficulty in producing equal numbers of origins and destinations in the transportation model.

A process must be followed before the first simulation run can be performed to balance the origins and destinations. In the Kootenai County model, the assumption was made that the external zone traffic volumes were correct and did not need to be included in the balancing operations. Any balancing adjustments would be done to the trip origins for the internal zones. First, the total differences by trip types were found. Then, the trip generation rates were reevaluated and appropriate changes were made to the trip rates. After this process was completed, the sums were checked for both internal and external zones, all trips were balanced by averaging the internal trips, and the origin-destination file was ready for initial TMODEL simulation runs. A listing of the origin-destination file is provided in the appendix.

Calibration

Approach
Calibration is an iterative process and includes upgrading or adjusting entered data, program coefficients, or parameters and assumptions on successive simulation runs until the volumes and traffic patterns produced by the model approximate known volumes within an "acceptable level of error." The acceptable level of error for calibrated model data has been recommended in National Cooperative Highway Research Program Report No. 255 entitled *Highway Traffic Data for Urbanized Area Project Planning and Design*. The primary premise behind these guidelines is that simulated model data should not significantly differ from actual count data thereby causing inappropriate under- or over-design of roadway facilities. Differences between modeled volumes and actual counts may look significant; however, in everyday practice, these differences should not cause unsuitable roadway facility planning.

There are three significant points to consider. The first is "acceptable level of error" and "How good are the counts?" Given that this is the basis for calibration, are these counts good enough for the process? If some count data is questionable, can the model be asked to simulate a condition better than the condition that is known?

Considering these questions, it has been found through experience in modeling that an "acceptable level of error" is directly related to the existing traffic volumes on a certain link. Through the course of calibration, higher volume streets can be expected to have better results. Acceptable limits may be that a 20% error can be expected on heavily used arterials, 40% on primary collectors, and perhaps as high as 200% on little-used rural collectors. Although the latter level of error may seem high, a variation of 200% on little-used roadways may mean a difference of 25 to 100 vehicles, insufficient to cause inappropriate facility planning when the model results are used.

The second point to consider is the adjustment of entered data, program parameters, and model assumptions. After entering all the data and making the initial model assumptions, the simulation distribution and assignment run is made. The desired outcome is that the results will perfectly match all the counts and the model will be calibrated. Usually, though, some data or assumptions (the "rules" of the model) are incorrect. On locating the errors from the distribution and assignment, causes are identified. The rules are reconsidered and adjusted.

Each change in data, parameters, or assumptions represents a refinement or upgrade of the rules. Each refinement **must be backed** by a reason. No changes are made to simply get better volumes. To apply the model to alternate scenarios, especially future year forecasts, each justification must be questioned for its continued application. If the rule still holds for the scenario, then it can be applied. If the rule is not applicable, then adjustments must be made in rules for that scenario.

Finally, it must be emphasized that the simulation being run with the model is one of human interaction with the transportation system. To do this, the program uses the gravity model to simulate the distribution of trips between zones and selects "shortest paths" for the assignment of trips. Human behavior is equated to a series of mathematical formulas that assume that all humans behave logically. While people do not always behave in a logical and rational manner, under most situations these assumptions are valid. Keeping this in mind, the calibration process is carried out.

Model Calibration Process
Essentially, calibration is comprised of three stages. First, working from outside to inside and large to small, all volumes that lead to the outside world through external zones are calibrated. After this step is completed, the procedure progresses, analyzing the model for general trends of trips. The third step is to evaluate the individual count locations and individual routes. Changes at any level may affect operations at another stage in calibration. That is, a proper allocation of trips to the right route may affect the general trends. Therefore, the calibration process is one of always looking back and continually monitoring each step until the procedure is complete.

External Zones
In TMODEL, zones are differentiated between "internal" and "external." Internal zones are those in which all the land use is known and all generated trips will go to and arrive from other zones in the modeled system. An external zone interacts with other zones in the modeled system and with the external world that surrounds the network. (Traffic count data, collected on the roadway leading in or out of an external zone, is used.) It is impossible to describe fully the land uses outside the modeled area that interact with the internal zones. Therefore, an external zone is described in the model as having origins and destinations to produce the appropriate volume of traffic on the roadways that connect it with the rest of the network.

TMODEL automatically adjusts the distribution to match the I-X and X-I origins and destinations at the external zones. It also automatically distributes the proper number of destinations to each zone based upon the values derived during the trip generation process.

At the conclusion of a simulation run, assigned model volumes from the simulation run are compared against the known count data. A scattergram report is printed listing the error from that run and the "acceptable level of error" as outlined in National Cooperative Highway Research Program Report #255, *Highway Traffic Data for Urbanized Area Project Planning and Design*. In this report, a methodology is presented that lists the "acceptable level of error" for roadways based upon their existing ADT volumes. It is "based upon the assumption that the maximum traffic assignment deviation should not result in a design deviation of more than one highway travel lane."[1]

From these results, analyses are performed and potential changes or upgrades to the entered data are made for the following simulation run. Overall high or low trends can suggest that information needs to be upgraded concerning dwelling units, employment, trip generation rates, and/or gravity model-spatial behavior coefficients. Throughout the calibration of overall trends, each segment of entered data is questioned and necessary changes are made. In addition, ground count data is also scrutinized.

General Trends
The Kootenai County model was next evaluated for general trends with the use of scattergrams. At the conclusion of a simulation run, assigned volumes from the simulation run are compared against the

[1] National Cooperative Highway Research Program Report No. 255, *Highway Traffic Data for Urbanized Area Project Planning and Design*, Transportation Research Board, December, 1982, page 41.

known count data. A report is printed showing the distribution of the error from that run and the "acceptable level of error" as outlined in National Cooperative Highway Research Program Report #255, *Highway Traffic Data for Urbanized Area Project Planning and Design*. In this report, a methodology is presented that lists the "acceptable level of error" for roadways based upon their existing ADT volumes. It is "based upon the assumption that the maximum traffic assignment deviation should not result in a design deviation of more than one highway travel lane."[2]

From these results, analyses are performed and potential changes or upgrades to the entered data are made for the following simulation run. Overall high or low trends can suggest that information needs to be upgraded concerning land use data and categories, trip generation rates, network delay parameters, and/or gravity model-spatial behavior exponents. Throughout the analysis of the scattergrams, each segment of entered data is questioned and necessary changes are made. In addition, ground count data is also scrutinized.

Allocation to Individual Routes
After it has been determined that the overall trends are acceptable, the individual routes are examined. In TMODEL, this process is usually performed by examining the desirability of certain routes by examining the free flow speeds, node capacity values, the link and node delay coefficients, land use quantities, trip generation rates, and/or multi-point assignment loading percentages. The primary premise for assigning trips to a network is based upon the shortest path in turn based on travel times.

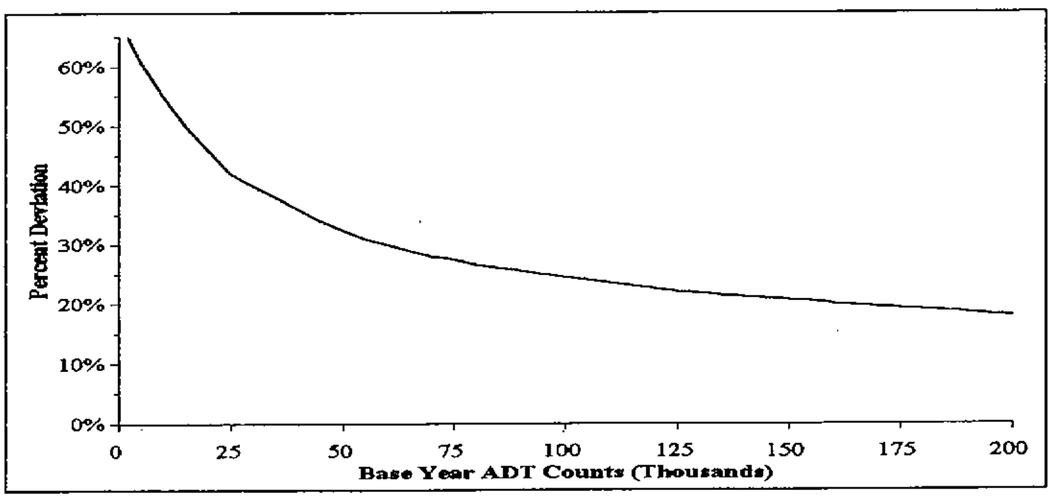


Figure 3 - Relative Allowable Errors

[2] National Cooperative Highway Research Program Report No. 255, *Highway Traffic Data for Urbanized Area Project Planning and Design*, Transportation Research Board, December, 1982, page 41.

Within TMODEL, travel time is controlled by the operating speed of the link. Therefore, the link speed may be raised or lowered to adjust the desirability of a certain route. There are limits to raising or lowering speeds, typically ∀10 mph on primary roadways. If a link's speed is altered beyond this range, there may be significant deviations from the known travel patterns of the model area. Should this occur, the previous steps to calibration must be scrutinized and changes made to earlier simulation assumptions.

Very few link speeds were changed for this model. The model was calibrated through carefully checking and verifying the input data and equation parameters. Multiple check plots were made to check against known data. When the traffic volume trends were close, each link that showed a significant deviation between model volume and traffic counts was scrutinized to find the source of that deviation. Trip generation values were adjusted to account for variations.

The Kootenai County model also used a unique feature in TMODEL called Multi-Point Assignment (MPA). In the typical transportation planning model, all trips begin and end at one point, called the centroid, within a traffic analysis zone. Depending on the spatial structure of the model, this can cause significant errors in the assignment of trips. The MPA allows the modeler to designate percentages of trips to and from the zone that will use specified access points. During calibration the MPA percentage allocations were analyzed and adjusted as necessary and appropriate to reflect the land use access to the network. These were reviewed with the assistance of ITD and KCATT member jurisdiction staff.

Model Verification

Finally, the "calibrated" model is verified against the base-year traffic counts. The verification process is a series of post-simulation run analyses that are designed to analyze the accuracy and degree of confidence presented in the calibrated results. Included in these analyses are tests of the screenlines, verification of the trip distribution characteristics, and comparisons of the traffic count data vs. modeled link volumes.

Figure 4 shows link ground counts on the X-axis and assigned volumes on the Y-axis. On the 'goal' line the assignment volume is equal to the ground count. The linear 'regression' line shows the best straight line estimate of the assignment volume for any count. The 'allowable' curves show the maximum allowable errors according to the graph discussed from NCHRP 255. Also, the aggregation of land use types may cause slightly higher or lower traffic generations for a specific zone due to the global land use designation. Other statistics calculated are:

AvgVol is the average assignment volume for all analyzed links.

%RMSE, the percent root mean square error, a summary statistic representing the average assignment error, disregarding sign, in percent.

$$\% \text{ RMSE} = 100 \times \frac{\sqrt{\dfrac{\sum(\text{Assignment Errors})^2}{\text{Number of Links}}}}{\text{Average Count}}$$

% In shows the percent of assigned volumes exceeding the allowable errors.

R^2, the coefficient of determination or 'goodness of fit' statistic, shows how well the regression line represents the assignment data.

Tic marks are shown at each 1000 on the X-axis. Each point in the graph that was near or out of the allowable limits was evaluated. All of the points that were near the allowable limits were felt to be caused by traffic count variations or due to other sampling errors.

There are no national standards for R^2 or RMSE. However, there are guidelines that have been established by Caltrans for data used in air quality analysis. The guidelines recommend an R^2 of 0.88, a maximum RMSE of 35%, and a minimum "% In" of 80% for links classified as Arterials and above. The Kootenai County model was analyzed on a directional traffic basis that requires more refinement. The comparison of the modeled directional traffic with the directional traffic counts shows an R^2 of 0.92 which exceeds the guideline of 0.88, an RMSE of 35% which is equivalent to the guideline of 35%, and a % In of 93% which exceeds the guideline of 80%. It is felt that the model represents the Kootenai County traffic flow patterns well and much better than the previous model.

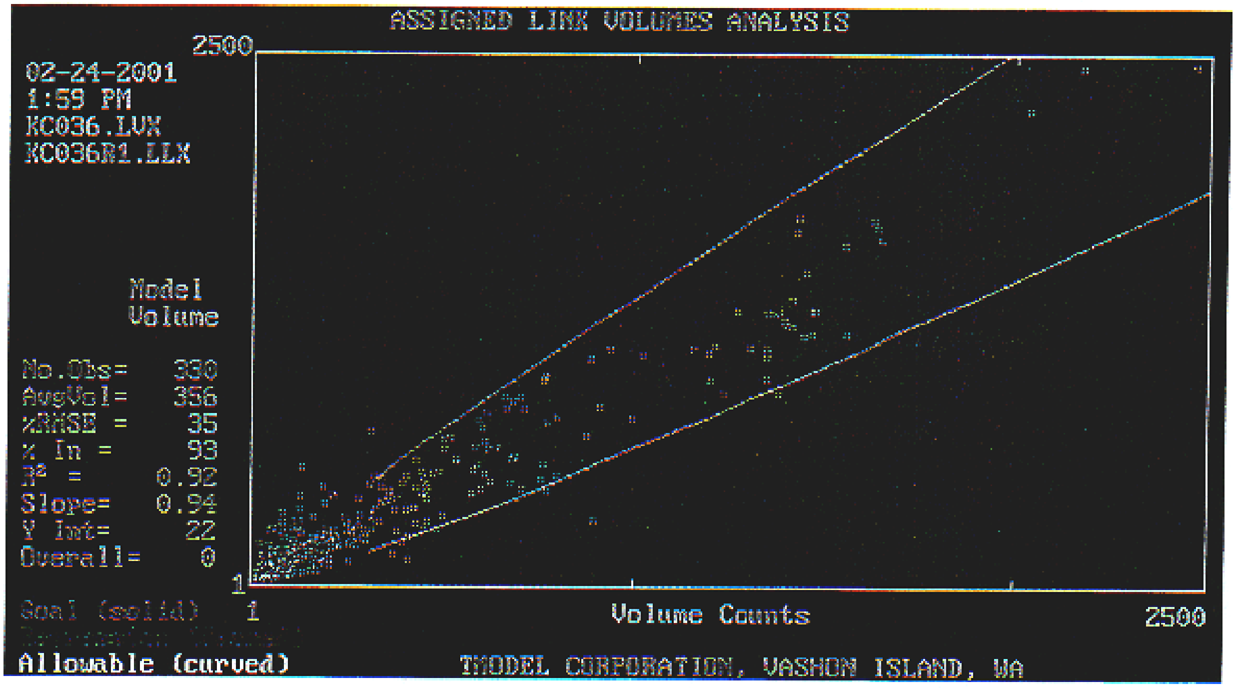


Figure 4 - Allowable Directional Errors Analysis
2000 Kootenai County Transportation Planning Model

Table 12 presents the percent errors by functional class. As mentioned earlier, a variation of 100% on a little used lower volume road may mean a difference of up to 100 vehicles, which is insignificant for facility planning. The recommended standard is that 80% of the roads classified as arterials or above are within limits, and 94% of the Kootenai County arterials and above are within limits. The standards are exceeded for all functional classifications. All deviations are within limits.

Table 12
Percent Error by Functional Class
2000 Kootenai County Transportation Planning Model

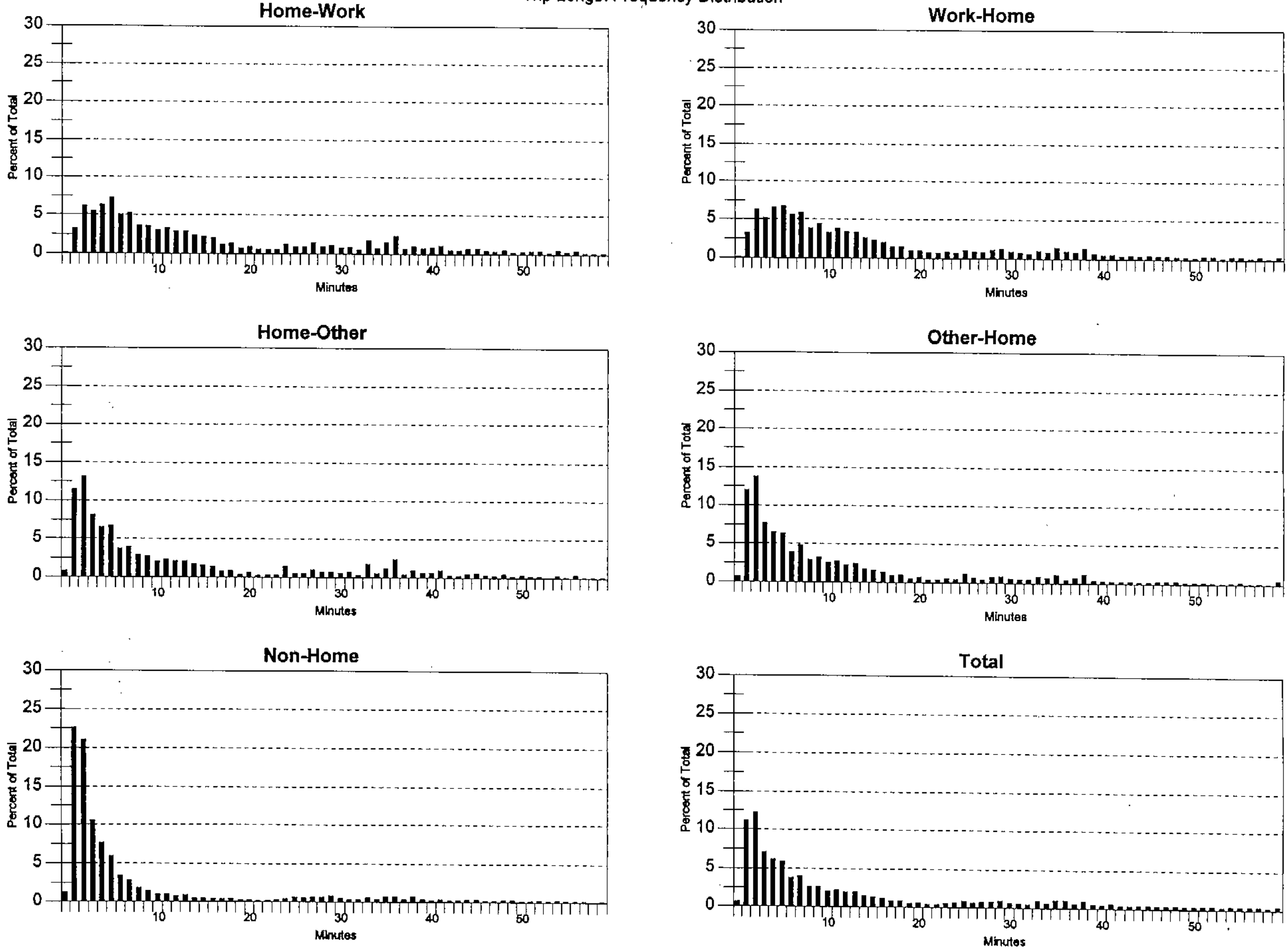
Class Number	Facility Type	Percent Deviation	Allowable % within limits
1	Freeway	7%	100%
2	Freeway Ramps	26%	83%
3	Principal (Major) Arterial	-4%	98%
4	Minor Arterial	1%	90%
5	Collector	2%	86%
6	Minor Collector	16%	N/A
7	Local Street	-9%	N/A
	Overall	0%	93%

Trip length frequency distributions were reviewed during the calibration process to also assess validation of the model. Figure 5 illustrates the trip length frequency distributions for each of the trip purposes and the total trips overall including the External-External (X-X) trips. The graphs for the individual trip purposes do not include the X-X trips. All distributions are shown for a 60 minute time span. The histograms display reasonable trip length frequency distributions for an area such as the Kootenai County area.

In the calibration of a transportation planning model, it is important to scrutinize the results and analyze their validity. The calibrated model forms the basis for completing future forecasts and alternate scenarios. Any errors or anomalies created in calibration will only be carried forward into these forecasts and may produce undesirable results. To assure that the model will replicate the future conditions properly, preliminary forecast model runs for the forecast year of 2005 were completed before the calibration was considered complete. Forecast runs were reviewed by the study team and the results appeared reasonable and logical.

Figure 5

Trip Length Frequency Distribution



Calibration History

Calibration of the Kootenai County model was conducted from October 2000 through January 2001. Over 20 TMODEL simulations were necessary to calibrate the model. It was the goal of the model's calibration to represent existing PM peak hour traffic volumes for the July/August 2000. All land use and travel characteristics data supplied was for this year.

Simulation Runs

Previously, external zone traffic volumes were the most difficult trips on the network to calibrate, and this took time. Now, since TMODEL has incorporated a "self-calibrating" module, the user may always duplicate the base-year traffic entered in the program that represents external zone volumes. Although the self-calibrating module accelerated the process, the assumptions made to develop the external zone volumes were continually challenged to determine that the simulation process was producing effective results.

The next task was to consider the general trends as shown in the scattergrams for overall traffic flow patterns. The scattergrams are used to validate the gravity (distribution) model's exponents and the general overall mass movement of traffic across the network. In these initial simulations, close attention is paid to the gravity model exponents and constants as well as to the overall amount of traffic generated for the model.

Attention then focused on adjusting the gravity model exponents upward or downward to better reflect travel with the scattergrams. If the overall travel was too high, it was an indicator that the friction of distance was too low and the exponents needed to be raised to shorten travel length and decrease volumes on major roadways. If overall travel is too low, the converse is true.

In the comparison count locations for the peak hour model, it was found that the overall count comparisons were too low. When this occurred, it signified that the combination of the trip lengths and the numbers of origins and destinations calculated during the trip generation process were too low. These rates were modified to more accurately reflect local conditions. The through trips were also reevaluated during this process and adjusted to better match conditions.

Once the overall trend analysis was considered acceptable, other adjustments were made to the model to produce better link volumes at known count locations. In transportation modeling, it is important to describe as accurately as possible how the driver perceives the traffic operations on the network. Speeds were adjusted slightly to reflect the drivers' perception as reflected by route choices apparent in traffic volume counts. The LOS analysis conducted for the US 95 Corridor was used as a guide to adjust the node capacity equations and the link and node delay coefficients files. The model was generally showing better LOS than was found with more precise analysis.

One of the parameters in a transportation planning model is link speeds. Known speed limits are entered as a starting place for the model. The simulated volumes are compared to known ground counts. If individual routes had too high or low simulated volumes, the posted speeds were adjusted so that estimated volumes could match known counts. All speed limit changes were within a ∀10 mph range.

To ensure proper distribution of traffic throughout the model, travel time matrices were saved as part of the calibration process. These matrices were then displayed in the travel/land use graphic viewer to analyze the travel times to/from selected zones in the Kootenai County area. This in turn would not only visually illustrate the travel times but aid in reviewing improper network coding such as capacity constraints, network connectivity, and link lengths. In addition, the trip distribution, or trip table, was graphically examined at selected zones for reasonableness. These reviews were also conducted during the TMODEL training sessions to get the opinions of the persons with knowledge and experience with traffic operations in the county.

The model was considered calibrated when the scattergram analysis met or exceeded the NCHRP 255 limits, simulated volumes were close to known counts, and recognized travel patterns modeled. Several count locations were out of the recommended standards. In discussions during the TMODEL training course, these locations were not considered to be critical. One location was near the high school and it was felt that the count was taken when school was in session. Because this model is replicating July/August, the traffic would be lower during this model period. Several other counts were questioned because the model network geography had been modified substantially and the exact locations were in question.

Final Calibration Values

Changes were made to the parameters in an iterative fashion based upon judgement. The final values used in the calibration are the following:

- Time and distance weights of 0.9 and 0.1, respectively.

- Incremental distribution and assignment assumed. Selection of this option meant that the gravity model distributions are based upon recalculated travel times in subsequent assignments.

- Table 13 illustrates the gravity model exponents set at the following (refer to page 5 for the form of the gravity model used in TMODEL):

Table 13
Gravity Model Parameters
2000 Kootenai County Transportation Planning Model

Trip Purpose	Beta Exponent	Alpha Exponent	Constant
HW	2.10	-0.25	25
WH	2.10	-0.25	25
HO	3.15	-0.25	5
OH	3.15	-0.25	5
NHB	3.05	-0.25	5

- A total of 10 gravity model iterations. To calibrate the external zone volumes effectively, a high number of gravity model iterations are used. TMODEL allows up to 10 iterations. But as the destinations are factored up or down, the user can specify a maximum destination error that can stop the process. A 0.01% error was assumed sufficient to calibrate the zone destinations. Factors were not changed during the calibration process.

- The incremental loading process. The process factors up volumes on links by the remaining loading percentages during the assignment process to account for completely loaded links on the network. No other assignment method was used during calibration.

- Ten loading increments of 20%, 10%, 10%, 10%, 10%, 10%, 10%, 10%, 5%, and 5% were used for the assignment process.

Forecasts

Forecast Process
The traffic volume forecasts are based upon projected changes in land use, changes in interaction with the area outside of the model, changes in travel behavior, and changes in the transportation system. Typically, as the number of households and jobs increase, traffic will increase as well. The calibration can be looked at as building and checking the "rules" for traffic generation, distribution, and assignment in the Kootenai County area. Then, as changes are made these same "rules" are used to project the change in traffic volumes and resulting changes in congestion, travel time, and emissions. The forecast process requires the projected number of housing units, projected number of employees by land use classification, etc. It also requires a forecast of interaction with the area outside of the models. Information is needed to project the trips that enter and leave the model area. Finally, any planned transportation improvement projects should be included to properly assess the future operation of the transportation system. Each of these items is discussed.

Land Use Forecasts
W&H Pacific and Intermountain Demographics provided all land use forecasts by traffic analysis zone for the forecast year of 2020. Where land use data was reallocated between existing traffic analysis zones in the base year calibration, the consultant team performed a similar reallocation for the forecast year, such as for LU9, Outer Single Family Dwelling Units.

Trips were generated for the forecast year with the same trip generation rates used in the year 2000 calibration. This assumes that the trip generation rates that were calibrated in 2000 will still apply in the future. Land use forecasts were developed based upon current trends and best estimates and an alternative land use forecast was developed to test the sensitivity of changes. The best estimate land use forecast was used for testing all the network alternatives. The alternative land use pattern test was used to determine whether changes in land use growth could solve the US95 Corridor problems. The land use summary files are included in the Appendix. This lists the forecast totals for each land use for each zone for the forecast year of 2020.

Trip Generation and Origin-Destination File Development
Trips were generated using the same methodology as used in the base year calibration. Growth in external trips needed to be estimated to include the impacts of trips that began or ended outside of the model area, including the through trips. Historical trends were used to estimate the external growth rates. These were reviewed by ITD and by SRTC (Spokane Regional Transportation Council) and some adjustments were made. The resultant growth factors for external trips are summarized in Table 14 and used for both sets of land use forecast assumptions.

Table 14
External Zone Growth Forecasts
2000 Kootenai County Transportation Planning Model

		2000			2020	
Zone	Location	Origins	Destinations	Factor	Origins	Destinations
176	State Hwy. 41 - N. County Line	241	266	1.32	318	351
177	US 95 - N. County Line	310	350	1.32	409	462
178	Bayview Road - N. County Line	36	36	1.32	48	48
179	E. Cape Horn Road - End	40	40	1.32	53	53
180	E. Canyon Road - E. County Line	30	30	1.32	40	40
181	I-90 - E. County Line	765	645	1.32	1010	851
182	Future	0	0	1.32	0	0
183	State Hwy. 3 - S. County Line	20	40	1.32	26	53
184	Heyburn Rd. - S. County Line	25	30	1.32	33	40
185	US 95 - S. County Line	250	210	1.32	330	277
186	W. Worley West Rd. - W. County Line	10	10	1.32	13	13
187	State Hwy. 58 (E. Hoxie Rd.) - W. County Line	106	86	1.32	140	114
188	W. Riverview Drive - W. County Line	80	40	1.32	106	53
189	I-90 - W. County Line	2475	1650	1.56	3861	2574
190	Seltice Way - W. County Line	100	95	1.32	132	125
191	State Hwy. 53 (Trent Ave.) - W. County Line	405	205	1.32	535	271

The origins and destinations and through trips for each external were all adjusted with the same growth factor for that external. After all trips were generated and externals were adjusted the total trips within each trip purpose were checked for balance. That is, each trip origin must have a corresponding trip destination. It was assumed that the imbalance in trips would be accounted for by trips coming in or leaving the model area. So, the externals were adjusted proportional to the volume entering or exiting at that external to account for this imbalance. The adjustments were always made to increase the externals to account for the internally generated trips. In the vernacular of the modeler, the external trips were normalized to the higher total value of the origins or destinations.

Network Alternatives

Network alternatives were coded to test the impacts of alternative improvements. This involved determining the location, functional classification, number of lanes, expected posted speed, and intersection controls of all expected improvements. There were different sets of improvements proposed for each of the tested network alternatives ranging from a "No-Build" scenario, which assumed year 2000 network conditions, to the Huetter Road Alternate and the US95 Expressway, which involved extensive re-configuration and new connections. Link and node capacities were computed using the same methodology tested in the calibration phase of model development. Turn movement penalties were checked and revised as necessary to match the updated network conditions. Multi-point assignment (MPA) equivalencies were revised as necessary to match the revised network and access configurations.

Model Runs

The model was run with the revised network (link and node), turn penalty, origin and destination, and through trip files. The files used to define the operation of the delays such as link delay coefficient, node delay coefficient, and turn penalty type files were assumed to be the same for future conditions. That is, drivers are being modeled to operate in a similar way as the drivers operate in the base year. The other model parameters such as those used for the incremental assignment, travel and distance weights, and gravity model parameters were also kept constant with the base year.

Volume plots were developed for each of the forecast scenarios. Turn movement forecasts were developed for further, more detailed analysis. These volume plots are attached to this document for further reference.

Conclusion

The Kootenai County model was updated to replicate year 2000 conditions within Kootenai County with particular emphasis on the US 95 Corridor. The model met and exceeded all applicable standards for transportation forecast model calibration. The rules and methodology established for the base 2000 year calibration were used to forecast traffic in the year 2020. Adjustments were made to the assumed land use, external traffic, and network configurations to provide these forecasts.

Appendix

Traffic Analysis Zone Plot
2000 Base Year Model Volumes
2000 Base Year Land Use
2000 Base Year Origins and Destinations
Forecast 2020 Land Use
Forecast Alternative 2020 Land Use
Forecast 2020 Origins and Destinations
Forecast 2020 Alternative Origins and Destinations

Distribution and Assignment Run Listings for
2000 Base Year Calibration
2020 No-Build (KFUT2)
2020 No-Build with Land Use Reallocation (KFUT3)
2020 STIP plus Local Street Capacity Improvements (KFUT4)
2020 Huetter Road Alternate (KFUT5)
2020 US95 Expressway (KFUT6)
2020 STIP (KSTIP)

Land Use Quantities			Base Year - 2000 - Kootenai County Model							
	SFDU	MFDU	Retail	Office	Indusrial	Schools	Hotel/Motel	Campgrounds	Outer SFDU	College/University
Zone	DU	DU	EMP	EMP	EMP	Students	Rooms	Spaces	DU	Students
1	0	350	25	36	0	0	0	40	875	0
2	0	42	75	222	0	1047	0	0	414	0
3	0	0	0	0	0	0	0	0	250	0
4	0	0	25	9	0	0	0	0	164	0
5	0	0	0	0	0	0	0	0	13	0
6	0	23	61	36	0	0	0	0	409	0
7	0	2	4	20	0	0	9	261	83	0
8	0	0	0	0	0	0	0	0	233	0
9	0	0	0	370	0	0	4	126	500	0
10	0	2	30	90	0	406	0	0	261	0
11	0	0	2	0	0	0	3	0	258	0
12	0	0	46	0	0	0	0	0	510	0
13	0	0	39	0	494	472	0	25	500	0
14	0	0	3	0	0	0	0	0	128	0
15	0	0	0	0	0	0	0	0	22	0
16	123	20	30	228	139	0	0	0	0	0
17	39	0	30	20	15	1081	0	0	0	0
18	200	20	100	106	0	0	0	0	0	0
19	237	6	24	0	6	0	0	0	0	0
20	21	6	15	207	0	0	0	0	0	0
21	297	45	35	33	4	0	0	0	0	0
22	98	0	6	56	10	0	0	0	0	0
23	0	12	60	211	4	549	0	0	0	0
24	80	20	0	0	0	0	0	0	0	0
25	701	0	108	79	0	0	0	0	0	0
26	59	0	0	41	20	0	0	0	0	0
27	150	12	0	48	0	475	0	0	0	0
28	0	0	0	104	150	0	0	0	0	0
29	138	0	0	0	111	0	0	0	0	0
30	189	0	44	0	0	0	0	70	0	0
31	0	0	0	0	0	0	0	0	354	0
32	157	0	10	0	50	0	3	0	0	0
33	0	0	0	0	0	0	0	0	0	0
34	1	0	0	0	0	0	0	0	0	0
35	1	0	0	0	50	0	0	0	0	0
36	1	0	0	0	0	0	0	0	0	0
37	33	0	0	0	0	0	0	0	0	0
38	5	0	0	0	200	0	0	0	0	0
39	111	0	0	121	0	0	0	0	0	0
40	13	0	0	96	0	0	0	0	0	0
41	7	0	0	0	0	0	0	0	0	0
42	45	0	0	0	0	0	0	0	0	0
43	36	0	3	2	0	0	0	0	0	0
44	328	0	26	14	0	0	100	0	0	0
45	55	0	32	3	550	0	0	0	0	0
46	402	0	0	11	0	0	0	0	0	0
47	227	0	0	3	0	0	0	0	0	0
48	7	0	0	56	0	0	0	0	0	0
49	39	0	5	0	0	0	0	0	0	0
50	64	0	4	3	0	0	0	0	0	0
51	512	17	0	0	0	0	0	0	0	0
52	490	113	4	81	0	1076	0	0	0	0
53	639	14	0	66	0	0	0	0	0	0
54	173	36	5	12	0	1617	0	0	0	0
55	402	5	8	0	0	0	0	0	0	0
56	60	3	15	159	0	857	0	0	0	0
57	222	8	12	25	0	0	0	0	0	0
58	323	39	0	6	0	0	0	0	0	0
59	143	2	3	2	9	0	0	0	0	0
60	1	0	40	2	9	0	0	0	0	0
61	74	72	146	3	0	0	0	117	0	0

Land Use Quantities			Base Year - 2000 - Kootenai County Model							
	SFDU	MFDU	Retail	Office	Indusrial	Schools	Hotel/Motel	Campgrounds	Outer SFDU	College/University
Zone	DU	DU	EMP	EMP	EMP	Students	Rooms	Spaces	DU	Students
62	120	0	4	2	0	0	0	0	0	0
63	100	0	0	0	0	0	0	0	0	0
64	0	0	39	0	0	0	0	0	0	0
65	0	12	12	43	0	656	0	0	0	0
66	7	15	34	2	0	0	0	0	0	0
67	15	15	150	60	0	0	0	0	0	0
68	32	0	115	66	0	0	0	0	0	0
69	2	48	130	125	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0
71	15	0	9	6	25	0	0	0	0	0
72	260	12	12	0	0	0	0	190	0	0
73	7	0	0	53	0	0	0	0	0	0
74	1	0	617	234	470	0	0	0	0	0
75	169	0	0	0	0	0	0	0	0	0
76	147	0	0	1	0	0	0	0	0	0
77	0	36	0	75	0	0	0	0	0	0
78	26	0	45	60	0	0	0	0	0	0
79	42	0	0	11	6	0	0	0	0	0
80	0	0	0	30	0	0	0	0	0	0
81	21	32	150	187	104	0	0	0	0	0
82	1	0	230	2	0	0	0	0	0	0
83	38	98	130	0	129	0	0	0	0	0
84	3	0	48	2	75	0	0	0	0	0
85	1	0	42	2	3	0	0	0	0	0
86	9	0	3	14	20	0	0	0	0	0
87	12	0	110	1	0	0	0	0	0	0
88	164	56	4	6	0	0	0	0	0	0
89	84	0	8	20	277	0	3	0	0	0
90	547	0	90	70	0	0	0	0	0	0
91	678	96	85	7	535	534	47	0	0	0
92	568	0	65	3	397	0	0	0	0	0
93	69	0	0	0	0	0	0	0	0	0
94	0	0	0	0	0	0	0	0	0	0
95	200	0	30	0	35	0	0	0	0	0
96	1222	71	190	127	0	355	21	0	0	0
97	531	33	0	24	0	0	0	0	0	0
98	0	0	37	1278	466	0	0	0	0	0
99	81	2	80	70	70	0	0	0	0	0
100	498	5	165	109	55	0	0	0	0	0
101	56	2	298	486	55	0	0	0	0	0
102	41	0	0	0	0	0	0	0	0	0
103	235	0	51	119	0	0	0	0	0	0
104	520	44	85	609	563	0	0	0	0	0
105	125	67	509	836	0	0	0	0	0	0
106	1000	20	197	413	0	562	5	0	0	0
107	0	0	85	0	139	0	0	0	0	0
108	81	0	0	0	0	0	0	0	0	0
109	146	143	118	840	28	0	0	0	0	0
110	2	5	1456	1599	125	0	0	0	0	0
111	544	56	480	187	277	0	0	0	0	0
112	251	0	0	0	0	0	0	0	0	0
113	195	1	0	94	69	0	0	0	0	0
114	678	27	35	150	1074	0	0	0	0	0
115	560	3	9	0	0	2555	0	0	0	0
116	582	10	718	374	427	701	0	0	0	0
117	1	10	718	36	0	0	40	0	0	0
118	498	0	275	905	0	1708	0	0	0	0
119	673	359	100	187	14	0	0	0	0	0
120	446	191	875	1160	305	0	155	0	0	0
121	98	100	1033	153	28	0	0	0	0	0
122	128	362	525	480	0	0	0	80	0	0

Land Use Quantities			Base Year - 2000 - Kootenai County Model							
	SFDU	MFDU	Retail	Office	Indusrial	Schools	Hotel/Motel	Campgrounds	Outer SFDU	College/University
Zone	DU	DU	EMP	EMP	EMP	Students	Rooms	Spaces	DU	Students
123	1084	69	74	569	0	0	2	0	0	0
124	782	51	0	0	0	720	0	0	0	0
125	25	27	328	164	1630	0	71	0	0	0
126	0	0	328	328	0	0	420	0	0	0
127	41	11	260	194	0	0	69	0	0	0
128	414	52	266	287	0	463	0	0	0	0
129	177	8	0	51	0	0	0	0	0	0
130	211	274	342	5217	28	277	206	136	0	0
131	200	37	748	2255	21	0	0	0	0	0
132	624	64	361	203	15	264	0	0	0	0
133	153	32	42	329	491	0	0	0	0	4049
134	487	434	431	1694	69	0	20	0	0	0
135	1334	198	417	1936	69	1286	54	0	0	0
136	552	84	147	607	0	489	81	0	0	0
137	399	185	0	84	0	0	0	0	0	0
138	207	95	167	1076	0	0	386	0	0	0
139	509	64	170	347	0	0	96	0	0	0
140	56	0	0	0	0	0	0	0	0	0
141	165	0	0	0	28	0	0	0	0	0
142	0	21	30	0	0	0	0	16	500	0
143	18	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	86	0
145	225	0	0	140	0	0	254	0	0	0
146	100	0	0	0	0	0	0	0	0	0
147	112	0	25	8	28	0	3	122	0	0
148	0	0	50	0	0	0	2	0	300	0
149	306	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	8	0	350	0
151	0	0	0	0	0	0	0	0	76	0
152	0	0	20	0	0	0	0	0	183	0
153	0	0	8	0	0	0	21	0	134	0
154	0	0	15	0	0	0	25	263	68	0
155	0	0	0	0	0	0	0	0	38	0
156	0	0	12	52	69	0	0	15	567	0
157	0	100	15	0	0	0	26	47	347	0
158	0	0	0	0	0	0	0	0	107	0
159	0	2	15	0	0	0	0	10	90	0
160	0	0	10	0	0	0	0	0	55	0
161	0	0	15	0	10	0	0	0	118	0
162	0	0	0	0	12	0	0	0	39	0
163	0	0	0	0	0	0	4	28	330	0
164	0	0	0	0	0	0	0	14	76	0
165	0	0	0	0	0	0	0	0	137	0
166	0	0	10	21	30	565	0	0	125	0
167	0	0	18	482	0	0	0	0	243	0
168	0	0	0	0	0	0	0	0	321	0
169	0	0	21	30	42	0	0	0	135	0
170	0	0	0	0	0	296	0	0	117	0
171	0	0	0	0	0	0	0	0	112	0
172	0	0	5	0	0	0	0	0	27	0
173	0	0	0	0	0	0	0	0	45	0
174	0	0	20	0	0	0	0	0	95	0
175	0	0	0	0	15	0	0	0	147	0
Total	27612	4608	15845	29971	10149	19011	2138	1560	9942	4049

File <KCTG12.OND> Kootenai County 2000 Base Year

ZONE NO.	TYPE1 ORIG	TYPE1 DEST	TYPE2 ORIG	TYPE2 DEST	TYPE3 ORIG	TYPE3 DEST	TYPE4 ORIG	TYPE4 DEST	TYPE5 ORIG	TYPE5 DEST	INTRA TIME MIN*100
1	30	3	9	161	80	10	12	178	55	79	300
2	10	11	47	58	25	42	58	63	82	84	300
3	6	0	0	32	12	0	0	34	7	10	300
4	4	2	5	21	8	8	9	22	17	19	300
5	0	0	0	2	1	0	0	2	0	1	255
6	10	6	13	55	23	21	25	59	45	50	300
7	3	4	6	14	4	9	6	12	24	61	266
8	5	0	0	29	12	0	0	31	7	9	300
9	12	7	53	65	25	14	36	68	53	61	300
10	6	5	19	33	13	17	23	36	35	36	300
11	6	0	0	33	13	1	1	35	9	12	300
12	11	4	6	64	26	15	16	69	36	44	300
13	11	9	78	63	25	27	66	68	82	65	300
14	3	0	0	16	6	1	1	17	5	7	300
15	0	0	0	3	1	0	0	3	1	1	300
16	7	7	55	31	25	19	45	36	54	42	72
17	2	5	16	9	7	22	26	10	35	39	61
18	12	11	28	48	39	36	45	57	71	77	102
19	13	2	4	54	44	8	9	64	28	37	68
20	1	4	31	6	4	11	25	7	26	19	52
21	18	4	10	74	59	13	16	87	42	52	45
22	5	1	10	22	18	4	8	26	15	15	57
23	0	9	41	2	1	32	47	2	55	50	77
24	5	0	0	21	17	0	0	25	6	9	65
25	39	11	26	158	129	38	45	187	106	130	300
26	3	1	9	13	11	2	6	16	9	8	197
27	9	1	10	36	29	6	10	42	21	26	86
28	0	3	35	0	0	6	24	0	21	8	95
29	8	1	16	31	25	2	11	37	18	17	182
30	11	5	7	44	35	16	16	51	38	56	267
31	8	0	0	45	18	0	0	48	10	14	300
32	9	1	8	36	29	4	8	42	20	23	202
33	0	0	0	0	0	0	0	0	0	0	128
34	0	0	0	0	0	0	0	0	0	0	133
35	0	0	7	0	0	1	5	0	4	1	141
36	0	0	0	0	0	0	0	0	0	0	128
37	2	0	0	7	6	0	0	9	2	3	135
38	0	2	28	1	1	4	19	1	17	5	192
39	6	2	17	25	20	4	11	30	17	16	147
40	1	1	13	3	2	3	9	3	9	5	143
41	0	0	0	2	1	0	0	2	0	1	136
42	2	0	0	10	8	0	0	12	3	5	141
43	2	0	1	8	7	1	1	10	4	5	207
44	22	5	9	79	60	13	14	88	60	81	142
45	3	8	82	12	10	21	64	15	65	36	112
46	22	0	2	91	74	0	1	107	28	41	87
47	13	0	0	51	42	0	0	61	16	23	92
48	0	1	8	2	1	2	5	2	5	3	115
49	2	0	1	9	7	2	2	10	5	7	120
50	4	0	1	14	12	1	2	17	6	9	149

File <KCTG12.OND> Kootenai County 2000 Base Year

ZONE NO.	TYPE1 ORIG	TYPE1 DEST	TYPE2 ORIG	TYPE2 DEST	TYPE3 ORIG	TYPE3 DEST	TYPE4 ORIG	TYPE4 DEST	TYPE5 ORIG	TYPE5 DEST	INTRA TIME MIN*100
51	29	0	0	118	96	0	0	140	35	53	72
52	30	3	19	127	102	15	21	150	61	81	73
53	36	1	9	146	119	2	6	173	49	68	93
54	11	3	12	44	35	18	21	52	39	51	96
55	22	1	1	91	74	3	3	108	31	45	108
56	3	5	29	14	11	18	30	17	36	35	30
57	12	1	5	51	42	5	7	61	23	30	33
58	19	0	1	79	63	0	1	93	24	35	46
59	8	0	2	33	26	1	2	39	12	16	51
60	0	4	7	0	0	13	15	0	20	21	154
61	7	15	21	29	21	51	52	32	85	111	72
62	7	0	1	27	22	1	2	32	10	14	67
63	6	0	0	23	18	0	0	27	7	10	58
64	0	4	5	0	0	13	14	0	19	20	68
65	0	3	12	2	1	12	15	2	19	20	21
66	1	3	5	4	3	11	12	4	18	19	28
67	1	15	29	6	4	51	58	7	79	82	21
68	2	12	25	7	6	40	46	9	63	65	18
69	2	14	35	7	5	46	57	9	75	75	38
70	0	0	0	0	0	0	0	0	0	0	27
71	1	1	6	3	3	4	6	4	8	7	41
72	15	3	3	63	49	9	6	72	35	71	74
73	0	1	7	2	1	2	5	2	5	3	69
74	0	65	182	0	0	218	281	0	355	339	135
75	9	0	0	38	31	0	0	45	11	17	79
76	8	0	0	33	27	0	0	39	10	15	57
77	1	1	10	5	4	2	7	6	8	5	43
78	1	5	14	6	5	17	21	7	28	28	17
79	2	0	2	9	8	0	2	11	4	5	24
80	0	0	4	0	0	1	3	0	2	1	21
81	2	17	61	9	7	57	80	11	99	92	36
82	0	22	31	0	0	75	80	0	111	119	33
83	5	13	36	23	17	45	57	27	80	80	34
84	0	5	17	1	1	17	24	1	30	27	54
85	0	4	6	0	0	14	15	0	21	22	68
86	0	1	5	2	2	2	4	2	5	4	61
87	1	10	15	3	2	36	38	3	54	58	65
88	11	0	1	45	36	1	2	53	16	22	57
89	5	4	43	19	15	9	31	22	35	21	55
90	30	9	22	123	100	32	38	146	86	104	57
91	42	15	92	169	134	46	89	198	154	157	69
92	31	10	65	128	104	29	61	152	103	101	84
93	4	0	0	16	13	0	0	18	5	7	57
94	0	0	0	0	0	0	0	0	0	0	116
95	11	3	9	45	37	10	14	53	31	37	176
96	70	20	46	287	232	71	83	339	197	244	158
97	30	0	3	125	101	1	2	148	39	57	169
98	0	25	248	0	0	59	178	0	161	82	99
99	5	9	30	19	15	30	41	22	56	54	113
100	28	17	45	113	92	58	73	134	127	141	90

File <KCTG12.OND> Kootenai County 2000 Base Year

ZONE NO.	TYPE1 ORIG	TYPE1 DEST	TYPE2 ORIG	TYPE2 DEST	TYPE3 ORIG	TYPE3 DEST	TYPE4 ORIG	TYPE4 DEST	TYPE5 ORIG	TYPE5 DEST	INTRA TIME MIN*100
101	3	35	115	13	10	113	155	15	192	180	87
102	2	0	0	9	8	0	0	11	3	4	141
103	13	6	23	53	43	20	29	63	50	55	116
104	30	21	175	124	100	57	141	147	174	137	93
105	9	59	185	38	30	192	256	45	325	313	62
106	56	25	88	229	186	83	114	271	206	232	87
107	0	9	31	0	0	30	43	0	52	47	142
108	4	0	0	18	15	0	0	22	5	8	134
109	12	23	137	54	41	65	123	63	143	119	86
110	0	159	436	1	1	528	668	1	843	818	60
111	32	50	130	131	106	168	211	155	308	320	92
112	14	0	0	57	46	0	0	67	17	25	137
113	11	2	23	44	36	4	15	52	27	25	150
114	38	15	176	157	127	36	129	186	164	120	146
115	31	5	17	127	103	29	31	150	78	106	127
116	32	77	213	133	108	262	333	157	461	467	95
117	2	69	103	3	1	238	254	2	359	386	67
118	27	40	174	112	91	135	200	133	264	258	98
119	48	12	41	204	160	39	54	241	123	151	116
120	36	104	327	135	101	335	448	152	617	614	76
121	8	99	165	37	28	344	375	43	523	555	54
122	18	57	138	82	61	189	228	96	319	342	51
123	62	15	89	255	206	42	80	302	158	176	76
124	45	1	4	184	149	7	8	218	65	95	142
125	5	49	298	13	7	146	287	11	326	243	109
126	15	45	105	19	0	136	160	0	288	323	71
127	5	29	64	14	9	94	111	13	161	170	66
128	24	29	79	101	81	101	125	120	188	202	78
129	10	1	7	41	33	2	5	49	16	20	131
130	28	109	786	98	67	286	627	103	683	527	73
131	12	101	417	50	41	314	475	60	562	499	67
132	36	37	81	150	121	127	149	178	240	266	71
133	9	29	181	39	31	73	178	46	197	170	95
134	41	64	304	173	134	195	317	204	406	376	72
135	81	69	345	332	265	212	351	390	494	482	85
136	36	24	110	140	110	75	117	162	188	197	90
137	28	1	12	117	92	3	8	138	41	56	131
138	28	39	186	78	48	105	174	72	281	286	108
139	33	23	75	128	100	71	95	147	171	189	102
140	3	0	0	13	10	0	0	15	4	6	130
141	9	0	4	37	30	1	3	44	13	17	270
142	12	3	4	66	27	10	11	71	30	39	300
143	1	0	0	4	3	0	0	5	1	2	209
144	2	0	0	11	4	0	0	12	2	3	300
145	21	8	28	62	41	16	22	60	89	114	100
146	6	0	0	23	18	0	0	27	7	10	107
147	7	4	10	27	21	12	13	30	31	50	162
148	7	5	7	38	15	16	17	40	33	38	300
149	17	0	0	69	56	0	0	82	21	31	269
150	8	0	0	44	18	0	0	47	12	16	300

File <KCTG12.OND> Kootenai County 2000 Base Year

ZONE NO.	TYPE1 ORIG	TYPE1 DEST	TYPE2 ORIG	TYPE2 DEST	TYPE3 ORIG	TYPE3 DEST	TYPE4 ORIG	TYPE4 DEST	TYPE5 ORIG	TYPE5 DEST	INTRA TIME MIN*100
151	2	0	0	10	4	0	0	10	2	3	231
152	4	2	3	23	9	7	7	25	15	17	244
153	4	1	2	18	7	3	3	18	13	16	295
154	3	5	5	13	3	13	8	9	32	71	300
155	1	0	0	5	2	0	0	5	1	1	300
156	13	3	19	72	28	7	16	77	33	35	300
157	12	3	3	60	28	7	7	64	30	46	300
158	2	0	0	13	5	0	0	14	3	4	300
159	2	2	2	12	5	5	5	12	10	13	300
160	1	1	1	7	3	3	3	7	6	7	300
161	3	1	3	15	6	5	6	16	11	13	300
162	1	0	2	5	2	0	1	5	2	2	300
163	8	0	0	42	16	1	0	45	12	20	300
164	2	0	0	10	4	0	0	10	3	6	300
165	3	0	0	17	7	0	0	18	4	5	300
166	3	2	12	16	6	10	14	17	20	21	300
167	5	8	69	31	12	20	52	33	55	38	300
168	7	0	0	40	16	0	0	43	9	13	300
169	3	3	13	17	7	9	14	18	20	18	300
170	3	0	2	15	6	3	3	16	7	10	300
171	2	0	0	14	6	0	0	15	3	4	300
172	1	0	1	3	1	2	2	4	3	4	300
173	1	0	0	6	2	0	0	6	1	2	300
174	2	2	3	12	5	7	7	13	12	14	300
175	3	0	2	19	7	0	1	20	5	6	300
176	17	20	48	56	48	33	29	56	50	58	0
177	19	16	53	44	53	26	32	44	55	46	0
178	2	3	7	8	7	4	4	8	7	8	0
179	2	2	6	6	6	3	4	6	6	6	0
180	2	2	6	6	6	3	3	6	6	6	0
181	46	38	128	106	128	63	77	106	134	110	0
182	0	0	0	0	0	0	0	0	0	0	0
183	2	3	4	8	4	5	3	8	4	9	0
184	0	1	1	2	1	1	1	2	1	2	0
185	9	7	24	20	24	12	15	20	25	21	0
186	0	0	0	0	0	0	0	0	1	1	0
187	3	2	9	4	9	3	6	4	10	5	0
188	7	3	20	8	20	5	12	8	21	9	0
189	197	121	548	336	548	202	329	336	570	350	0
190	9	8	25	21	25	13	15	21	26	22	0
191	28	16	79	45	79	27	47	45	82	47	0

Land Use Quantities		Year 2020 Kootenai County Model								
	SFDU	MFDU	Retail	Office	Indusrial	Schools	Hotel/Motel	Campgrounds	Outer SFDU	College/University
Zone	DU	DU	EMP	EMP	EMP	Students	Rooms	Spaces	DU	Students
1	0	442	124	216	106	0	0	40	1320	0
2	0	42	97	293	0	2525	0	0	414	0
3	0	0	28	59	0	0	0	0	438	0
4	0	0	57	64	0	0	0	0	329	0
5	0	0	1	3	0	0	0	0	22	0
6	0	23	103	100	0	0	0	0	575	0
7	0	2	5	27	0	0	9	261	85	0
8	0	0	31	66	0	0	0	0	444	0
9	0	0	33	559	0	0	4	126	724	0
10	0	4	58	159	0	979	0	0	386	0
11	0	0	46	93	0	0	3	0	553	0
12	0	0	157	207	0	0	0	0	1170	0
13	0	0	128	164	629	1138	0	25	1021	0
14	0	0	14	22	0	0	0	0	198	0
15	0	0	0	0	0	0	0	0	25	0
16	298	23	65	354	177	0	0	0	0	0
17	85	0	48	41	19	2607	0	0	0	0
18	388	27	158	201	0	0	0	0	0	0
19	415	6	57	56	0	0	0	0	0	0
20	67	6	26	288	0	0	0	0	0	0
21	429	57	67	89	5	0	0	0	0	0
22	528	0	72	209	13	0	0	0	0	0
23	132	16	98	321	5	1324	0	0	0	0
24	412	23	50	105	0	0	0	0	0	0
25	1767	71	308	461	0	0	0	0	0	0
26	78	0	3	60	25	0	0	0	0	0
27	218	16	11	86	0	1146	0	0	0	0
28	2	0	0	138	191	0	0	0	0	0
29	284	0	22	48	141	0	0	0	0	0
30	303	0	74	36	0	0	0	70	0	0
31	0	0	38	76	0	0	0	0	596	0
32	528	0	68	116	116	0	3	0	0	0
33	0	0	0	0	0	0	0	0	0	0
34	3	0	0	1	0	0	0	0	0	0
35	2	0	0	0	64	0	0	0	0	0
36	1	0	0	0	0	0	0	0	0	0
37	121	0	13	28	0	0	0	0	0	0
38	5	0	0	0	255	0	0	0	0	0
39	141	0	4	169	0	0	0	0	0	0
40	17	0	1	128	0	0	0	0	0	0
41	9	0	0	1	0	0	0	0	0	0
42	45	0	0	0	0	0	0	0	0	0
43	303	0	44	86	0	0	0	0	0	0
44	614	0	76	108	0	0	100	0	0	0
45	2391	44	395	73	701	0	0	0	0	0
46	701	0	44	108	0	0	0	0	0	0
47	761	0	79	171	0	0	0	0	0	0
48	131	0	18	113	0	0	0	0	0	0
49	189	22	32	54	0	0	0	0	0	0
50	617	22	91	183	0	0	0	0	0	0
51	632	39	21	45	0	0	0	0	0	0
52	494	113	6	108	0	1943	0	0	0	0
53	1325	16	102	303	0	0	0	0	0	0
54	512	91	65	140	0	2921	0	0	0	0
55	539	93	44	71	0	0	0	0	0	0
56	60	3	19	210	0	1548	0	0	0	0
57	222	20	17	37	0	0	0	0	0	0
58	443	99	27	64	0	0	0	0	0	0
59	242	76	30	56	0	0	0	0	0	0
60	1	0	52	2	0	0	0	0	0	0
61	74	129	197	445	0	0	0	117	0	0

Land Use Quantities			Year 2020 Kootenai County Model							
	SFDU	MFDU	Retail	Office	Indusrial	Schools	Hotel/Motel	Campgrounds	Outer SFDU	College/University
Zone	DU	DU	EMP	EMP	EMP	Students	Rooms	Spaces	DU	Students
62	120	0	5	426	0	0	0	0	0	0
63	130	42	11	23	0	0	0	0	0	0
64	0	0	50	0	0	0	0	0	0	0
65	0	12	15	57	0	1184	0	0	0	0
66	7	15	44	2	0	0	0	0	0	0
67	15	15	194	79	0	0	0	0	0	0
68	32	0	148	87	0	0	0	0	0	0
69	2	48	168	125	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0
71	15	0	12	8	32	0	0	0	0	0
72	641	12	412	120	0	0	0	190	0	0
73	393	0	57	191	0	0	0	0	0	0
74	1	0	811	309	873	0	0	0	0	0
75	495	0	46	924	1846	0	0	0	0	0
76	293	0	22	869	0	0	0	0	0	0
77	0	36	0	99	0	0	0	0	0	0
78	26	6	59	62	0	0	0	0	0	0
79	42	13	2	19	88	0	0	0	0	0
80	0	0	0	40	0	0	0	0	0	0
81	21	32	194	247	132	0	0	0	0	0
82	1	0	297	2	0	0	0	0	0	0
83	38	98	168	0	164	0	0	0	0	0
84	3	0	62	3	141	0	0	0	0	0
85	1	0	54	2	36	0	0	0	0	0
86	9	0	4	14	0	0	0	0	0	0
87	12	0	142	1	0	0	0	0	0	0
88	164	117	14	27	0	0	0	0	0	0
89	97	0	12	30	353	0	3	0	0	0
90	577	51	128	118	0	0	0	0	0	0
91	871	155	147	88	1117	984	47	0	0	0
92	999	10	149	141	848	0	0	0	0	0
93	226	0	23	49	0	0	0	0	0	0
94	0	0	0	0	0	0	0	0	0	0
95	211	12	42	7	45	0	0	0	0	0
96	2042	128	376	443	0	460	21	0	0	0
97	937	41	62	162	0	0	0	0	0	0
98	4	0	48	1688	1299	0	0	0	0	0
99	145	2	113	112	596	0	0	0	0	0
100	739	37	253	230	70	0	0	0	0	0
101	90	7	390	654	70	0	0	0	0	0
102	263	0	33	70	0	0	0	0	0	0
103	777	0	146	327	0	0	0	0	0	0
104	937	67	175	942	1153	0	0	0	0	0
105	140	110	665	1122	0	0	0	0	0	0
106	1587	73	349	746	0	728	5	0	0	0
107	0	0	110	0	177	0	0	0	0	0
108	1223	560	253	534	0	0	0	0	0	0
109	1149	705	385	1600	36	0	0	0	0	0
110	2	5	1865	2111	159	0	0	0	0	0
111	744	110	657	327	353	0	0	0	0	0
112	363	0	17	35	0	0	0	0	0	0
113	307	2	17	160	88	0	0	0	0	0
114	966	53	92	297	1474	0	0	0	0	0
115	1016	253	117	222	0	3308	0	0	0	0
116	728	30	951	546	32	908	0	0	0	0
117	17	17	930	55	0	0	40	0	0	0
118	819	0	403	1296	0	2212	0	0	0	0
119	740	384	143	276	18	0	0	0	0	0
120	514	274	1152	1579	32	0	155	0	0	0
121	237	333	1388	319	36	0	0	0	0	0
122	488	581	525	480	0	0	0	80	0	0

Land Use Quantities		Year 2020 Kootenai County Model								
	SFDU	MFDU	Retail	Office	Indusrial	Schools	Hotel/Motel	Campgrounds	Outer SFDU	College/University
Zone	DU	DU	EMP	EMP	EMP	Students	Rooms	Spaces	DU	Students
123	1142	107	110	781	0	0	2	0	0	0
124	1429	140	109	231	0	932	0	0	0	0
125	432	283	522	460	382	0	71	0	0	0
126	0	0	423	433	0	0	420	0	0	0
127	41	11	336	256	0	0	69	0	0	0
128	443	65	349	392	0	599	0	0	0	0
129	433	32	42	155	0	0	0	0	0	0
130	247	305	451	5467	36	359	206	136	0	0
131	227	40	970	2986	27	0	0	0	0	0
132	685	77	361	291	0	342	0	0	0	0
133	166	34	56	439	0	0	0	0	0	7313
134	539	459	568	2260	88	0	20	0	0	0
135	1413	205	551	2583	88	1664	54	0	0	0
136	583	90	195	813	0	633	81	0	0	0
137	408	185	1	114	0	0	0	0	0	0
138	223	100	219	1427	0	0	386	0	0	0
139	680	83	248	518	0	0	96	0	0	0
140	114	0	9	18	0	0	0	0	0	0
141	468	0	45	95	36	0	0	0	0	0
142	0	74	69	65	0	0	0	16	653	0
143	22	0	1	1	0	0	0	0	0	0
144	0	0	1	3	0	0	0	0	95	0
145	232	0	1	187	0	0	254	0	0	0
146	186	0	13	27	0	0	0	0	0	0
147	112	0	32	11	36	0	3	122	0	0
148	0	0	72	16	0	0	2	0	350	0
149	356	0	7	16	0	0	0	0	0	0
150	0	0	34	72	0	0	8	0	581	0
151	0	0	7	15	0	0	0	0	123	0
152	0	0	34	16	0	0	0	0	235	0
153	0	0	17	13	0	0	21	0	177	0
154	0	0	25	12	0	0	25	263	106	0
155	0	0	1	1	0	0	0	0	42	0
156	0	0	61	164	88	0	0	15	871	0
157	0	100	35	32	0	0	26	47	450	0
158	0	0	5	10	0	0	0	0	140	0
159	0	2	23	7	0	0	0	10	113	0
160	0	0	15	4	0	0	0	0	68	0
161	0	0	23	8	0	0	0	0	142	0
162	0	0	1	1	0	0	0	0	43	0
163	0	0	7	16	0	0	4	28	380	0
164	0	0	6	13	0	0	0	14	119	0
165	0	0	12	25	0	0	0	0	216	0
166	0	0	19	41	38	689	0	0	168	0
167	0	0	30	651	0	0	0	0	290	0
168	0	0	11	23	0	0	0	0	393	0
169	0	0	29	44	54	0	0	0	149	0
170	0	0	4	9	0	296	0	0	146	0
171	0	0	3	7	0	0	0	0	135	0
172	0	0	7	2	0	0	0	0	33	0
173	0	0	2	3	0	0	0	0	56	0
174	0	0	27	3	0	0	0	0	105	0
175	0	0	2	4	0	0	0	0	160	0
Total	49526	8363	24732	49158	14586	31409	2138	1560	14839	7313

Land Use Quantities			Year 2020 Kootenai County Model - Alternative Land Use Distribution							
	SFDU	MFDU	Retail	Office	Indusrial	Schools	Hotel/Motel	Campgrounds	Outer SFDU	College/University
Zone	DU	DU	EMP	EMP	EMP	Students	Rooms	Spaces	DU	Students
1	0	442	124	216	106	0	0	40	1320	0
2	0	42	97	293	0	2525	0	0	414	0
3	0	0	28	59	0	0	0	0	438	0
4	0	0	57	64	0	0	0	0	329	0
5	0	0	1	3	0	0	0	0	22	0
6	0	23	103	100	0	0	0	0	575	0
7	0	2	5	27	0	0	9	261	85	0
8	0	0	31	66	0	0	0	0	444	0
9	0	0	33	559	0	0	4	126	724	0
10	0	4	58	159	0	979	0	0	386	0
11	0	0	46	93	0	0	3	0	553	0
12	0	0	157	207	0	0	0	0	1170	0
13	0	0	128	164	629	1138	0	25	1021	0
14	0	0	14	22	0	0	0	0	198	0
15	0	0	0	0	0	0	0	0	25	0
16	298	23	65	354	177	0	0	0	0	0
17	85	0	46	41	19	2607	0	0	0	0
18	388	27	158	201	0	0	0	0	0	0
19	415	6	57	56	0	0	0	0	0	0
20	67	6	26	288	0	0	0	0	0	0
21	429	57	67	89	5	0	0	0	0	0
22	528	0	72	209	13	0	0	0	0	0
23	132	16	98	321	5	1324	0	0	0	0
24	412	23	50	105	0	0	0	0	0	0
25	1767	71	308	461	0	0	0	0	0	0
26	78	0	3	60	25	0	0	0	0	0
27	218	16	11	86	0	1146	0	0	0	0
28	2	0	0	138	191	0	0	0	0	0
29	284	0	22	46	141	0	0	0	0	0
30	303	0	74	36	0	0	0	70	0	0
31	0	0	36	76	0	0	0	0	596	0
32	528	0	68	116	116	0	3	0	0	0
33	0	0	0	0	0	0	0	0	0	0
34	3	0	0	1	0	0	0	0	0	0
35	2	0	0	0	64	0	0	0	0	0
36	1	0	0	0	0	0	0	0	0	0
37	121	0	13	28	0	0	0	0	0	0
38	5	0	0	0	255	0	0	0	0	0
39	141	0	4	169	0	0	0	0	0	0
40	17	0	1	128	0	0	0	0	0	0
41	9	0	0	1	0	0	0	0	0	0
42	45	0	0	0	0	0	0	0	0	0
43	303	0	44	86	0	0	0	0	0	0
44	614	0	76	108	0	0	100	0	0	0
45	2391	44	395	73	701	0	0	0	0	0
46	701	0	44	108	0	0	0	0	0	0
47	761	0	79	171	0	0	0	0	0	0
48	131	0	18	113	0	0	0	0	0	0
49	189	22	32	54	0	0	0	0	0	0
50	617	22	91	183	0	0	0	0	0	0
51	632	39	21	45	0	0	0	0	0	0
52	494	113	6	108	0	1943	0	0	0	0
53	1325	16	102	303	0	0	0	0	0	0
54	512	91	65	140	0	2921	0	0	0	0
55	539	93	44	71	0	0	0	0	0	0
56	60	3	19	210	0	1548	0	0	0	0
57	222	20	17	37	0	0	0	0	0	0
58	443	99	27	64	0	0	0	0	0	0
59	242	76	30	56	0	0	0	0	0	0
60	1	0	52	2	0	0	0	0	0	0
61	74	129	197	445	0	0	0	117	0	0

Land Use Quantities			Year 2020 Kootenai County Model - Alternative Land Use Distribution							
	SFDU	MFDU	Retail	Office	Indusrial	Schools	Hotel/Motel	Campgrounds	Outer SFDU	College/University
Zone	DU	DU	EMP	EMP	EMP	Students	Rooms	Spaces	DU	Students
62	120	0	5	426	0	0	0	0	0	0
63	130	42	11	23	0	0	0	0	0	0
64	0	0	50	0	0	0	0	0	0	0
65	0	12	15	57	0	1184	0	0	0	0
66	7	15	44	2	0	0	0	0	0	0
67	15	15	194	79	0	0	0	0	0	0
68	32	0	148	87	0	0	0	0	0	0
69	2	48	168	125	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0
71	15	0	12	8	32	0	0	0	0	0
72	641	12	412	120	0	0	0	190	0	0
73	393	0	57	191	0	0	0	0	0	0
74	1	0	811	309	873	0	0	0	0	0
75	495	0	48	924	1846	0	0	0	0	0
76	293	0	22	869	0	0	0	0	0	0
77	0	36	0	99	0	0	0	0	0	0
78	26	6	59	62	0	0	0	0	0	0
79	42	13	2	19	88	0	0	0	0	0
80	0	0	0	40	0	0	0	0	0	0
81	21	32	194	247	132	0	0	0	0	0
82	1	0	297	2	0	0	0	0	0	0
83	38	98	168	0	164	0	0	0	0	0
84	3	0	62	3	141	0	0	0	0	0
85	1	0	54	2	36	0	0	0	0	0
86	9	0	4	14	0	0	0	0	0	0
87	12	0	142	1	0	0	0	0	0	0
88	164	117	14	27	0	0	0	0	0	0
89	97	0	12	30	353	0	3	0	0	0
90	577	51	128	118	0	0	0	0	0	0
91	871	155	147	88	1117	964	47	0	0	0
92	999	10	149	141	848	0	0	0	0	0
93	226	0	23	49	0	0	0	0	0	0
94	0	0	0	0	0	0	0	0	0	0
95	211	12	42	7	45	0	0	0	0	0
96	2042	128	376	443	0	460	21	0	0	0
97	937	41	62	162	0	0	0	0	0	0
98	4	0	48	1688	1299	0	0	0	0	0
99	145	2	113	112	596	0	0	0	0	0
100	739	37	253	230	70	0	0	0	0	0
101	90	7	390	654	70	0	0	0	0	0
102	263	0	33	70	0	0	0	0	0	0
103	777	0	346	327	0	0	0	0	0	0
104	937	67	85	942	1153	0	0	0	0	0
105	140	110	509	1122	0	0	0	0	0	0
106	1587	73	349	746	0	728	5	0	0	0
107	0	0	110	0	177	0	0	0	0	0
108	1223	560	453	534	0	0	0	0	0	0
109	1149	705	118	1600	36	0	0	0	0	0
110	2	5	1458	2111	159	0	0	0	0	0
111	744	110	657	327	353	0	0	0	0	0
112	363	0	17	35	0	0	0	0	0	0
113	307	2	17	160	88	0	0	0	0	0
114	966	53	92	297	1474	0	0	0	0	0
115	1016	253	117	222	0	3308	0	0	0	0
116	728	30	718	546	32	908	0	0	0	0
117	17	17	718	55	0	0	40	0	0	0
118	819	0	403	1296	0	2212	0	0	0	0
119	740	384	143	276	18	0	0	0	0	0
120	514	274	875	1579	32	0	155	0	0	0
121	237	333	1033	319	36	0	0	0	0	0
122	488	581	525	480	0	0	0	80	0	0

Land Use Quantities		Year 2020 Kootenai County Model - Alternative Land Use Distribution								
	SFDU	MFDU	Retail	Office	Indusrial	Schools	Hotel/Motel	Campgrounds	Outer SFDU	College/University
Zone	DU	DU	EMP	EMP	EMP	Students	Rooms	Spaces	DU	Students
123	1142	107	110	781	0	0	2	0	0	0
124	1429	140	309	231	0	932	0	0	0	0
125	432	283	822	460	382	0	71	0	0	0
126	0	0	423	433	0	0	420	0	0	0
127	41	11	336	256	0	0	69	0	0	0
128	443	65	349	392	0	599	0	0	0	0
129	433	32	42	155	0	0	0	0	0	0
130	247	305	451	5467	36	359	206	136	0	0
131	227	40	970	2986	27	0	0	0	0	0
132	685	77	361	291	0	342	0	0	0	0
133	166	34	56	439	0	0	0	0	0	7313
134	539	459	568	2260	88	0	20	0	0	0
135	1413	205	851	2583	88	1664	54	0	0	0
136	583	90	895	813	0	633	81	0	0	0
137	408	185	1	114	0	0	0	0	0	0
138	223	100	219	1427	0	0	386	0	0	0
139	680	83	548	518	0	0	96	0	0	0
140	114	0	9	18	0	0	0	0	0	0
141	468	0	45	95	36	0	0	0	0	0
142	0	74	69	65	0	0	0	16	653	0
143	22	0	1	1	0	0	0	0	0	0
144	0	0	1	3	0	0	0	0	95	0
145	232	0	1	187	0	0	254	0	0	0
146	186	0	13	27	0	0	0	0	0	0
147	112	0	32	11	36	0	3	122	0	0
148	0	0	72	16	0	0	2	0	350	0
149	356	0	7	16	0	0	0	0	0	0
150	0	0	34	72	0	0	8	0	581	0
151	0	0	7	15	0	0	0	0	123	0
152	0	0	34	16	0	0	0	0	235	0
153	0	0	17	13	0	0	21	0	177	0
154	0	0	25	12	0	0	25	283	106	0
155	0	0	1	1	0	0	0	0	42	0
156	0	0	61	164	88	0	0	15	871	0
157	0	100	35	32	0	0	26	47	450	0
158	0	0	5	10	0	0	0	0	140	0
159	0	2	23	7	0	0	0	10	113	0
160	0	0	15	4	0	0	0	0	68	0
161	0	0	23	8	0	0	0	0	142	0
162	0	0	1	1	0	0	0	0	43	0
163	0	0	7	16	0	0	4	28	380	0
164	0	0	6	13	0	0	0	14	119	0
165	0	0	12	25	0	0	0	0	216	0
166	0	0	19	41	38	689	0	0	168	0
167	0	0	30	651	0	0	0	0	290	0
168	0	0	11	23	0	0	0	0	393	0
169	0	0	29	44	54	0	0	0	149	0
170	0	0	4	9	0	296	0	0	146	0
171	0	0	3	7	0	0	0	0	135	0
172	0	0	7	2	0	0	0	0	33	0
173	0	0	2	3	0	0	0	0	56	0
174	0	0	27	3	0	0	0	0	105	0
175	0	0	2	4	0	0	0	0	160	0
Total	49526	8363	24733	49158	14586	31409	2138	1560	14839	7313

File <KCFUT2.OND> Kootenai County 2020 Forecast

ZONE NO.	TYPE1 ORIG	TYPE1 DEST	TYPE2 ORIG	TYPE2 DEST	TYPE3 ORIG	TYPE3 DEST	TYPE4 ORIG	TYPE4 DEST	TYPE5 ORIG	TYPE5 DEST	INTRA TIME MIN*100
1	43	16	62	231	111	50	74	254	142	163	300
2	10	17	70	58	25	66	89	63	119	124	300
3	10	3	12	55	22	11	15	59	31	34	300
4	7	6	17	41	16	21	26	44	42	45	300
5	0	0	1	3	1	1	1	3	1	2	255
6	13	11	28	76	31	37	45	82	75	81	300
7	3	4	7	15	4	9	7	12	26	62	266
8	10	4	13	56	22	12	17	60	33	36	300
9	17	12	83	93	36	31	66	98	91	94	300
10	9	9	36	49	20	34	46	53	65	68	300
11	12	6	19	70	28	18	25	75	46	50	300
12	26	18	50	147	58	58	74	158	126	135	300
13	23	22	135	129	51	71	133	138	173	152	300
14	4	2	5	25	10	5	7	27	14	16	300
15	1	0	0	3	1	0	0	3	1	1	300
16	17	12	83	71	57	35	73	84	96	84	72
17	5	9	31	19	16	43	50	23	69	79	61
18	22	18	49	91	74	58	74	108	120	130	102
19	23	6	16	95	77	21	25	112	60	74	68
20	4	6	44	16	13	17	36	19	41	32	52
21	25	7	22	105	85	25	32	124	71	85	45
22	29	10	40	119	97	30	46	141	88	99	57
23	8	15	67	32	26	55	79	38	102	101	77
24	23	6	21	96	78	20	27	114	61	73	65
25	100	35	106	409	332	115	151	484	308	360	300
26	4	1	12	18	14	3	9	21	14	12	197
27	12	4	21	52	42	18	24	61	44	52	86
28	0	4	46	0	0	8	31	1	27	11	95
29	16	4	29	64	52	11	25	76	45	45	182
30	17	8	15	69	56	27	30	81	63	84	267
31	13	4	15	75	30	14	20	80	40	45	300
32	29	9	42	119	97	28	46	141	88	97	202
33	0	0	0	0	0	0	0	0	0	0	128
34	0	0	0	1	1	0	0	1	0	0	133
35	0	1	9	0	0	1	6	1	6	2	141
36	0	0	0	0	0	0	0	0	0	0	128
37	7	2	6	27	22	5	7	32	17	20	135
38	0	2	36	1	1	5	24	1	21	7	192
39	8	3	24	32	26	7	18	38	26	23	147
40	1	2	18	4	3	4	12	5	12	7	143
41	0	0	0	2	2	0	0	2	1	1	136
42	2	0	0	10	8	0	0	12	3	5	141
43	17	5	18	68	56	17	23	81	48	56	207
44	37	11	29	143	113	33	40	164	112	139	142
45	133	44	162	546	443	145	211	647	417	468	112
46	39	6	21	158	129	18	26	187	78	98	87
47	42	10	34	172	140	31	44	203	103	125	92
48	7	3	18	30	24	9	17	35	27	27	115
49	11	4	12	46	37	12	16	54	33	39	120
50	35	11	38	142	116	35	49	169	101	118	149

File <KCFUT2.OND> Kootenai County 2020 Forecast

ZONE NO.	TYPE1 ORIG	TYPE1 DEST	TYPE2 ORIG	TYPE2 DEST	TYPE3 ORIG	TYPE3 DEST	TYPE4 ORIG	TYPE4 DEST	TYPE5 ORIG	TYPE5 DEST	INTRA TIME MIN*100
51	36	3	9	148	120	8	12	176	58	79	72
52	31	5	28	128	102	25	33	151	76	98	73
53	73	14	56	301	245	43	64	357	164	200	93
54	31	12	46	129	103	55	68	152	122	147	96
55	33	5	16	135	108	16	22	160	67	86	108
56	3	7	41	14	11	28	44	17	52	51	30
57	13	2	7	53	43	7	9	63	27	34	33
58	27	3	13	114	91	11	15	135	52	68	46
59	16	4	12	66	52	11	16	78	38	47	51
60	0	5	7	0	0	17	18	0	25	27	154
61	9	26	89	37	27	81	111	42	148	158	72
62	7	6	60	27	22	15	42	32	46	32	67
63	8	1	5	35	28	4	6	42	17	22	58
64	0	5	7	0	0	16	17	0	24	26	68
65	0	4	17	2	1	19	24	2	29	32	21
66	1	4	6	4	3	14	15	4	22	24	28
67	1	19	37	6	4	66	75	7	101	105	21
68	2	15	32	7	6	51	60	9	81	83	18
69	2	17	40	7	5	59	70	9	93	95	38
70	0	0	0	0	0	0	0	0	0	0	27
71	1	1	7	3	3	5	8	4	10	9	41
72	36	43	74	149	119	143	156	173	264	320	74
73	22	8	34	89	72	25	38	105	70	77	69
74	0	88	274	0	0	291	394	0	488	452	135
75	27	33	393	112	91	78	281	132	285	157	79
76	16	14	124	66	54	33	90	78	102	76	57
77	1	1	14	5	4	3	9	6	9	6	43
78	2	6	17	7	5	21	26	8	35	36	17
79	3	1	15	11	9	3	11	13	13	9	24
80	0	1	6	0	0	1	4	0	3	2	21
81	2	23	79	9	7	73	103	11	127	117	36
82	0	28	40	0	0	97	103	0	143	153	33
83	5	17	46	23	17	58	74	27	101	101	34
84	0	7	29	1	1	23	35	1	42	36	54
85	0	5	13	0	0	18	22	0	29	29	68
86	0	1	2	2	2	2	3	2	4	3	61
87	1	13	19	3	2	47	49	3	69	74	65
88	13	2	6	54	42	5	8	64	25	33	57
89	5	5	55	22	18	12	41	26	45	27	55
90	33	14	34	138	111	46	56	163	112	132	57
91	54	27	196	221	176	84	178	259	260	237	69
92	55	23	159	227	184	69	146	269	221	205	84
93	12	3	10	51	41	9	13	60	31	37	57
94	0	0	0	0	0	0	0	0	0	0	116
95	12	4	13	49	40	15	20	58	39	45	176
96	117	42	116	480	388	142	178	568	371	441	158
97	53	8	31	217	176	25	37	257	108	135	169
98	0	39	423	1	1	91	301	1	270	125	99
99	8	17	114	33	27	51	107	39	123	92	113
100	42	27	76	172	139	91	116	204	198	219	90

File <KCFUT2.OND> Kootenai County 2020 Forecast

ZONE NO.	TYPE1 ORIG	TYPE1 DEST	TYPE2 ORIG	TYPE2 DEST	TYPE3 ORIG	TYPE3 DEST	TYPE4 ORIG	TYPE4 DEST	TYPE5 ORIG	TYPE5 DEST	INTRA TIME MIN*100
101	5	46	153	21	17	149	204	25	254	239	87
102	14	4	14	59	48	13	18	70	39	46	141
103	43	18	65	175	143	58	82	208	150	167	116
104	54	39	316	221	179	107	260	262	323	255	93
105	11	77	246	47	37	252	337	56	426	409	62
106	90	44	156	369	299	145	200	437	351	389	87
107	0	12	40	0	0	39	55	0	67	61	142
108	85	31	108	357	282	99	138	423	269	312	134
109	85	58	279	361	283	175	289	428	424	425	86
110	0	204	567	1	1	678	862	1	1085	1050	60
111	44	69	183	184	148	232	293	218	427	443	92
112	20	2	7	82	67	7	9	97	35	47	137
113	17	4	37	70	57	12	29	82	49	48	150
114	55	26	260	226	183	67	201	267	258	196	146
115	64	19	67	266	212	78	98	315	199	245	127
116	41	98	214	169	137	338	395	200	569	604	95
117	3	89	134	8	5	308	329	7	464	498	67
118	45	58	248	185	150	194	287	219	387	381	98
119	53	17	60	222	175	55	77	263	157	185	116
120	42	133	385	162	122	433	558	184	770	779	76
121	23	135	237	102	78	465	515	120	726	774	54
122	45	57	138	195	149	189	228	230	352	392	51
123	66	21	124	273	221	60	112	324	198	211	76
124	83	15	53	343	277	52	70	406	186	235	142
125	35	60	190	142	108	195	264	164	378	382	109
126	15	55	132	19	0	171	203	0	343	377	71
127	5	36	83	14	9	121	143	13	203	211	66
128	26	39	105	109	88	132	165	130	241	255	78
129	25	6	27	102	83	18	29	121	63	73	131
130	31	123	837	111	77	330	690	118	762	601	73
131	14	131	550	57	46	409	622	68	731	646	67
132	40	38	91	166	134	131	157	196	252	278	71
133	10	40	178	42	34	105	215	50	251	256	95
134	44	85	404	189	146	257	420	222	525	476	72
135	86	91	458	351	280	280	464	413	624	593	85
136	38	32	146	148	116	99	155	171	232	236	90
137	28	2	16	119	94	4	11	141	44	58	131
138	29	48	241	82	51	132	225	77	336	329	108
139	43	32	109	170	133	101	138	196	234	255	102
140	6	1	4	26	21	3	5	30	13	17	130
141	26	6	24	106	86	18	28	125	64	75	270
142	17	8	18	93	40	25	30	101	61	72	300
143	1	0	0	5	4	0	0	6	2	3	209
144	2	0	1	12	5	1	1	13	4	5	300
145	22	8	35	64	43	17	27	62	94	117	100
146	10	2	5	42	34	5	7	50	21	26	107
147	7	5	12	27	21	15	17	30	35	54	162
148	8	7	12	44	18	24	27	47	46	52	300
149	20	1	3	80	65	3	4	95	29	40	269
150	13	4	15	74	29	14	19	78	41	46	300

File <KCFUT2.OND> Kootenai County 2020 Forecast

ZONE NO.	TYPE1 ORIG	TYPE1 DEST	TYPE2 ORIG	TYPE2 DEST	TYPE3 ORIG	TYPE3 DEST	TYPE4 ORIG	TYPE4 DEST	TYPE5 ORIG	TYPE5 DEST	INTRA TIME MIN*100
151	3	1	3	15	6	3	4	17	8	9	231
152	5	3	7	30	12	11	13	32	24	27	244
153	5	2	5	23	9	7	8	24	19	23	295
154	4	6	8	18	5	16	13	14	38	78	300
155	1	0	0	5	2	0	0	6	2	2	300
156	19	9	43	110	44	27	45	118	75	77	300
157	14	5	10	73	33	15	16	78	45	61	300
158	3	1	2	18	7	2	3	19	7	8	300
159	3	2	4	15	6	8	9	16	15	19	300
160	1	1	3	9	3	5	6	9	9	10	300
161	3	2	4	18	7	8	9	19	16	18	300
162	1	0	0	5	2	0	0	6	2	2	300
163	9	1	4	48	19	4	4	51	18	26	300
164	3	1	3	15	6	3	4	16	8	11	300
165	5	1	5	27	11	5	6	29	14	15	300
166	4	4	18	21	8	15	22	23	30	31	300
167	6	12	95	37	14	30	72	39	76	53	300
168	9	1	5	50	20	4	6	53	18	22	300
169	3	4	18	19	7	12	19	20	26	24	300
170	3	1	4	18	7	5	6	20	11	13	300
171	3	0	1	17	7	1	2	18	6	7	300
172	1	1	1	4	2	2	3	4	5	5	300
173	1	0	1	7	3	1	1	8	3	3	300
174	2	3	4	13	5	9	10	14	16	18	300
175	4	0	1	20	8	1	1	22	6	7	300
176	23	48	125	73	64	129	110	73	69	76	0
177	25	39	136	58	70	103	121	58	75	60	0
178	3	7	18	10	9	18	14	10	9	10	0
179	3	6	16	7	8	12	14	7	8	8	0
180	3	6	16	7	8	12	14	7	8	8	0
181	61	93	329	139	169	244	294	139	182	145	0
182	0	0	0	0	0	0	0	0	0	0	0
183	2	7	12	11	6	21	9	11	6	12	0
184	1	2	4	2	2	3	3	2	2	2	0
185	11	19	62	27	32	47	55	27	34	28	0
186	0	0	2	1	1	0	0	1	1	1	0
187	4	4	23	6	12	12	20	6	13	6	0
188	9	7	51	11	26	21	46	11	28	12	0
189	308	351	1667	525	855	925	1479	525	918	546	0
190	12	19	64	28	33	50	58	28	35	29	0
191	37	39	203	59	104	106	179	59	111	62	0

File <KCFUT3.OND> Kootenai County 2020 Alternative Forecast

ZONE NO.	TYPE1 ORIG	TYPE1 DEST	TYPE2 ORIG	TYPE2 DEST	TYPE3 ORIG	TYPE3 DEST	TYPE4 ORIG	TYPE4 DEST	TYPE5 ORIG	TYPE5 DEST	INTRA TIME MIN*100
1	43	16	62	231	111	50	74	254	142	163	300
2	10	17	70	58	25	66	89	63	119	124	300
3	10	3	12	55	22	11	15	59	31	34	300
4	7	6	17	41	16	21	26	44	42	45	300
5	0	0	1	3	1	1	1	3	1	2	255
6	13	11	28	76	31	37	45	82	75	81	300
7	3	4	7	15	4	9	7	12	26	62	266
8	10	4	13	56	22	12	17	60	33	36	300
9	17	12	83	93	36	31	66	98	91	94	300
10	9	9	36	49	20	34	46	53	65	68	300
11	12	6	19	70	28	18	25	75	46	50	300
12	26	18	50	147	58	58	74	158	126	135	300
13	23	22	135	129	51	71	133	138	173	152	300
14	4	2	5	25	10	5	7	27	14	16	300
15	1	0	0	3	1	0	0	3	1	1	300
16	17	12	83	71	57	35	73	84	96	84	72
17	5	9	31	19	16	43	50	23	69	79	61
18	22	18	49	91	74	58	74	108	120	130	102
19	23	6	16	95	77	21	25	112	60	74	68
20	4	6	44	16	13	17	36	19	41	32	52
21	25	7	22	105	85	25	32	124	71	85	45
22	29	10	40	119	97	30	46	141	88	99	57
23	8	15	67	32	26	55	79	38	102	101	77
24	23	6	21	96	78	20	27	114	61	73	65
25	100	35	106	409	332	115	151	484	308	360	300
26	4	1	12	18	14	3	9	21	14	12	197
27	12	4	21	52	42	18	24	61	44	52	86
28	0	4	46	0	0	8	31	1	27	11	95
29	16	4	29	64	52	11	25	76	45	45	182
30	17	8	15	69	56	27	30	81	63	84	267
31	13	4	15	75	30	14	20	80	40	45	300
32	29	9	42	119	97	28	46	141	88	97	202
33	0	0	0	0	0	0	0	0	0	0	128
34	0	0	0	1	1	0	0	1	0	0	133
35	0	1	9	0	0	1	6	1	6	2	141
36	0	0	0	0	0	0	0	0	0	0	128
37	7	2	6	27	22	5	7	32	17	20	135
38	0	2	36	1	1	5	24	1	21	7	192
39	8	3	24	32	26	7	18	38	26	23	147
40	1	2	18	4	3	4	12	5	12	7	143
41	0	0	0	2	2	0	0	2	1	1	136
42	2	0	0	10	8	0	0	12	3	5	141
43	17	5	18	68	56	17	23	81	48	56	207
44	37	11	29	143	113	33	40	164	112	139	142
45	133	44	162	546	443	145	211	647	417	468	112
46	39	6	21	158	129	18	26	187	78	98	87
47	42	10	34	172	140	31	44	203	103	125	92
48	7	3	18	30	24	9	17	35	27	27	115
49	11	4	12	46	37	12	16	54	33	39	120
50	35	11	38	142	116	35	49	169	101	118	149

File <KCFUT3.OND> Kootenai County 2020 Alternative Forecast

ZONE NO.	TYPE1 ORIG	TYPE1 DEST	TYPE2 ORIG	TYPE2 DEST	TYPE3 ORIG	TYPE3 DEST	TYPE4 ORIG	TYPE4 DEST	TYPE5 ORIG	TYPE5 DEST	INTRA TIME MIN*100
51	36	3	9	148	120	8	12	176	58	79	72
52	31	5	28	128	102	25	33	151	76	98	73
53	73	14	56	301	245	43	64	357	164	200	93
54	31	12	46	129	103	55	68	152	122	147	96
55	33	5	16	135	108	16	22	160	67	86	108
56	3	7	41	14	11	28	44	17	52	51	30
57	13	2	7	53	43	7	9	63	27	34	33
58	27	3	13	114	91	11	15	135	52	68	46
59	16	4	12	66	52	11	16	78	38	47	51
60	0	5	7	0	0	17	18	0	25	27	154
61	9	26	89	37	27	81	111	42	148	158	72
62	7	6	60	27	22	15	42	32	46	32	67
63	8	1	5	35	28	4	6	42	17	22	58
64	0	5	7	0	0	16	17	0	24	26	68
65	0	4	17	2	1	19	24	2	29	32	21
66	1	4	6	4	3	14	15	4	22	24	28
67	1	19	37	6	4	66	75	7	101	105	21
68	2	15	32	7	6	51	60	9	81	83	18
69	2	17	40	7	5	59	70	9	93	95	38
70	0	0	0	0	0	0	0	0	0	0	27
71	1	1	7	3	3	5	8	4	10	9	41
72	36	43	74	149	119	143	156	173	264	320	74
73	22	8	34	89	72	25	38	105	70	77	69
74	0	88	274	0	0	291	394	0	488	452	135
75	27	33	393	112	91	78	281	132	285	157	79
76	16	14	124	66	54	33	90	78	102	76	57
77	1	1	14	5	4	3	9	6	9	6	43
78	2	6	17	7	5	21	26	8	35	36	17
79	3	1	15	11	9	3	11	13	13	9	24
80	0	1	6	0	0	1	4	0	3	2	21
81	2	23	79	9	7	73	103	11	127	117	36
82	0	28	40	0	0	97	103	0	143	153	33
83	5	17	46	23	17	58	74	27	101	101	34
84	0	7	29	1	1	23	35	1	42	36	54
85	0	5	13	0	0	18	22	0	29	29	68
86	0	1	2	2	2	2	3	2	4	3	61
87	1	13	19	3	2	47	49	3	69	74	65
88	13	2	6	54	42	5	8	64	25	33	57
89	5	5	55	22	18	12	41	26	45	27	55
90	33	14	34	138	111	46	56	163	112	132	57
91	54	27	196	221	176	84	178	259	260	237	69
92	55	23	159	227	184	69	146	269	221	205	84
93	12	3	10	51	41	9	13	60	31	37	57
94	0	0	0	0	0	0	0	0	0	0	116
95	12	4	13	49	40	15	20	58	39	45	176
96	117	42	116	480	388	142	178	568	371	441	158
97	53	8	31	217	176	25	37	257	108	135	169
98	0	39	423	1	1	91	301	1	270	125	99
99	8	17	114	33	27	51	107	39	123	92	113
100	42	27	76	172	139	91	116	204	198	219	90

ORIGIN & DESTINATION LISTING AND STATISTICS 6:04:51 PM 11-01-2001 Page 3
File <KCFUT3.OND> Kootenai County 2020 Alternative Forecast

ZONE NO.	TYPE1 ORIG	TYPE1 DEST	TYPE2 ORIG	TYPE2 DEST	TYPE3 ORIG	TYPE3 DEST	TYPE4 ORIG	TYPE4 DEST	TYPE5 ORIG	TYPE5 DEST	INTRA TIME MIN*100
101	5	46	153	21	17	149	204	25	254	239	87
102	14	4	14	59	48	13	18	70	39	46	141
103	43	37	92	175	143	123	151	208	246	270	116
104	54	31	304	221	179	78	229	262	279	209	93
105	11	63	225	47	37	201	283	56	351	329	62
106	90	44	156	369	299	145	200	437	351	389	87
107	0	12	40	0	0	39	55	0	67	61	142
108	85	50	135	357	282	165	208	423	365	415	134
109	85	33	243	361	283	88	196	428	295	288	86
110	0	166	512	1	1	544	720	1	888	840	60
111	44	69	183	184	148	232	293	218	427	443	92
112	20	2	7	82	67	7	9	97	35	47	137
113	17	4	37	70	57	12	29	82	49	48	150
114	55	26	260	226	183	67	201	267	258	196	146
115	64	19	67	266	212	78	98	315	199	245	127
116	41	76	183	169	137	262	314	200	456	484	95
117	3	69	106	8	5	239	256	7	362	388	67
118	45	58	248	185	150	194	287	219	387	381	98
119	53	17	60	222	175	55	77	263	157	185	116
120	42	107	347	162	122	342	462	184	637	637	76
121	23	101	189	102	78	349	392	120	555	591	54
122	45	57	138	195	149	189	228	230	352	392	51
123	66	21	124	273	221	60	112	324	198	211	76
124	83	33	80	343	277	118	139	406	283	338	142
125	35	88	231	142	108	294	368	164	522	537	109
126	15	55	132	19	0	171	203	0	343	377	71
127	5	36	83	14	9	121	143	13	203	211	66
128	26	39	105	109	88	132	165	130	241	255	78
129	25	6	27	102	83	18	29	121	63	73	131
130	31	123	837	111	77	330	690	118	762	601	73
131	14	131	550	57	46	409	622	68	731	646	67
132	40	38	91	166	134	131	157	196	252	278	71
133	10	40	178	42	34	105	215	50	251	256	95
134	44	85	404	189	146	257	420	222	525	476	72
135	86	119	498	351	280	378	568	413	769	747	85
136	38	79	214	148	116	263	328	171	473	494	90
137	28	2	16	119	94	4	11	141	44	58	131
138	29	48	241	82	51	132	225	77	336	329	108
139	43	60	149	170	133	199	242	196	379	409	102
140	6	1	4	26	21	3	5	30	13	17	130
141	26	6	24	106	86	18	28	125	64	75	270
142	17	8	18	93	40	25	30	101	61	72	300
143	1	0	0	5	4	0	0	6	2	3	209
144	2	0	1	12	5	1	1	13	4	5	300
145	22	8	35	64	43	17	27	62	94	117	100
146	10	2	5	42	34	5	7	50	21	26	107
147	7	5	12	27	21	15	17	30	35	54	162
148	8	7	12	44	18	24	27	47	46	52	300
149	20	1	3	80	65	3	4	95	29	40	269
150	13	4	15	74	29	14	19	78	41	46	300

File <KCFUT3.OND> Kootenai County 2020 Alternative Forecast

ZONE NO.	TYPE1 ORIG	TYPE1 DEST	TYPE2 ORIG	TYPE2 DEST	TYPE3 ORIG	TYPE3 DEST	TYPE4 ORIG	TYPE4 DEST	TYPE5 ORIG	TYPE5 DEST	INTRA TIME MIN*100
151	3	1	3	15	6	3	4	17	8	9	231
152	5	3	7	30	12	11	13	32	24	27	244
153	5	2	5	23	9	7	8	24	19	23	295
154	4	6	8	18	5	16	13	14	38	78	300
155	1	0	0	5	2	0	0	6	2	2	300
156	19	9	43	110	44	27	45	118	75	77	300
157	14	5	10	73	33	15	16	78	45	61	300
158	3	1	2	18	7	2	3	19	7	8	300
159	3	2	4	15	6	8	9	16	15	19	300
160	1	1	3	9	3	5	6	9	9	10	300
161	3	2	4	18	7	8	9	19	16	18	300
162	1	0	0	5	2	0	0	6	2	2	300
163	9	1	4	48	19	4	4	51	18	26	300
164	3	1	3	15	6	3	4	16	8	11	300
165	5	1	5	27	11	5	6	29	14	15	300
166	4	4	18	21	8	15	22	23	30	31	300
167	6	12	95	37	14	30	72	39	76	53	300
168	9	1	5	50	20	4	6	53	18	22	300
169	3	4	18	19	7	12	19	20	26	24	300
170	3	1	4	18	7	5	6	20	11	13	300
171	3	0	1	17	7	1	2	18	6	7	300
172	1	1	1	4	2	2	3	4	5	5	300
173	1	0	1	7	3	1	1	8	3	3	300
174	2	3	4	13	5	9	10	14	16	18	300
175	4	0	1	20	8	1	1	22	6	7	300
176	23	48	125	73	64	129	110	73	69	76	0
177	25	39	136	58	70	103	121	58	75	60	0
178	3	7	18	10	9	18	14	10	9	10	0
179	3	6	16	7	8	12	14	7	8	8	0
180	3	6	16	7	8	12	14	7	8	8	0
181	61	93	329	139	169	243	294	139	182	145	0
182	0	0	0	0	0	0	0	0	0	0	0
183	2	7	12	11	6	21	9	11	6	12	0
184	1	2	4	2	2	3	3	2	2	2	0
185	11	19	62	27	32	47	55	27	34	28	0
186	0	0	2	1	1	0	0	1	1	1	0
187	4	4	23	6	12	12	20	6	13	6	0
188	9	7	51	11	26	21	46	11	28	12	0
189	308	351	1666	525	855	923	1479	525	919	546	0
190	12	19	64	28	33	50	58	28	35	29	0
191	37	39	203	59	104	106	179	59	112	62	0

TMODEL3 DISTRIBUTION & ASSIGNMENT RUN - MPA/UQP Version W.253
TMODEL3

TMODEL CORPORATION
VASHON ISLAND, WA

START TIME IS 20:09:54 1/24/2001

Distribution and Assignment file is N:\ITD95\KC036R1.DNA

Node Source file is N:\ITD95\KC036.NDE with 1218 Nodes
Node Delay Coefficients Source file is N:\ITD95\KC026.NDC with 99 Entries

Link Source file is N:\ITD95\KC036.LNX with 3894 Links
Link Delay Coefficients Source file is N:\ITD95\KC026.LDC with 11 Entries
Link Storage file is N:\ITD95\KC036R1.LLX

Turn Penalty file is N:\ITD95\KC034.TNP with 3854 Entries
Turn Penalty Type file is N:\ITD95\KC034.TPT with 2 Entries

Do you want Turn Movements ? Y
Turn Movements Source File is N:\ITD95\KC035.TRN with 14 Entries
Turn Movement Storage File is N:\ITD95\KC036R1.TRN

Travel Time Weight is .85 Travel Distance Weight is .15
Build and Use Vines

Save Incremental Travel Time Matrices ? Y
Incremental Travel Time File is N:\ITD95\KC036R1.TT1

Distribution and Assignment
Origin and Destination File is N:\ITD95\KCTG12.OND with 191 Zones
Use Gravity Model Defaults? N
5 Trip Types, Consisting of Types : 1 2 3 4 5

Trip Types	Beta	Alpha	Constant
1	2.1	-.25	25
2	2.1	-.25	25
3	3.15	-.25	5
4	3.15	-.25	5
5	3.05	-.25	5

Number of Gravity Model Iterations is 10 with Maximum Deviation of .0001
Save Partial Trip Tables?Y
Partial Trip Table File is N:\ITD95\KC036R1.T11
Trip Table Storage file is N:\ITD95\KC036R1.TTB

Use Trip Table Input File? Y
Trip Table Input File is N:\ITD95\KC011.TTI with 191 Zones
Incremental Loading with 10 Increments
Loading Increment 1 = .2
Loading Increment 2 = .1
Loading Increment 3 = .1
Loading Increment 4 = .1
Loading Increment 5 = .1
Loading Increment 6 = .1
Loading Increment 7 = .1
Loading Increment 8 = .1
Loading Increment 9 = .05
Loading Increment 10 = .05

Save Select Link Trip Table? N
Multi-Point Assignment Used with N:\ITD95\KC034.ZSQ with 745 Entries

Print Errors? Y
Trace All Outputs? N

Trace Partial Outputs? N
Print Destination Balancing Statistics? N
Print Setup Summary? Y
Print File is N:\ITD95\KC036R1.TXT

"Final Base Year Calibration - Revised southern US 95

END TIME IS 21:15:07 1/24/2001

TMODEL3 DISTRIBUTION & ASSIGNMENT RUN - MPA/UQP Version W.253
TMODEL3

TMODEL CORPORATION
VASHON ISLAND, WA

START TIME IS 20:11:50 1/24/2001

Distribution and Assignment file is N:\ITD95\KFUT2.DNA

Node Source file is N:\ITD95\KC036.NDE with 1218 Nodes
Node Delay Coefficients Source file is N:\ITD95\KC026.NDC with 99 Entries

Link Source file is N:\ITD95\KC036.LNX with 3894 Links
Link Delay Coefficients Source file is N:\ITD95\KC026.LDC with 11 Entries
Link Storage file is N:\ITD95\KFUT2.LLX

Turn Penalty file is N:\ITD95\KC034.TNP with 3854 Entries
Turn Penalty Type file is N:\ITD95\KC034.TPT with 2 Entries

Do you want Turn Movements ? Y
Turn Movements Source File is N:\ITD95\KC035.TRN with 14 Entries
Turn Movement Storage File is N:\ITD95\KFUT2.TRN

Travel Time Weight is .85 Travel Distance Weight is .15
Build and Use Vines

Save Incremental Travel Time Matrices ? N

Distribution and Assignment
Origin and Destination File is N:\ITD95\KCFUT2.OND with 191 Zones
Use Gravity Model Defaults? N
5 Trip Types, Consisting of Types : 1 2 3 4 5

Trip Types	Beta	Alpha	Constant
1	2.1	-.25	25
2	2.1	-.25	25
3	3.15	-.25	5
4	3.15	-.25	5
5	3.05	-.25	5

Number of Gravity Model Iterations is 10 with Maximum Deviation of .0001
Save Partial Trip Tables?N
Trip Table Storage file is N:\ITD95\KFUT2.TTB

Use Trip Table Input File? Y
Trip Table Input File is N:\ITD95\KCFUT2.TTI with 191 Zones
Incremental Loading with 10 Increments
Loading Increment 1 = .2
Loading Increment 2 = .1
Loading Increment 3 = .1
Loading Increment 4 = .1
Loading Increment 5 = .1
Loading Increment 6 = .1
Loading Increment 7 = .1
Loading Increment 8 = .1
Loading Increment 9 = .05
Loading Increment 10 = .05

Save Select Link Trip Table? N
Multi-Point Assignment Used with N:\ITD95\KC034.ZSQ with 745 Entries

Print Errors? Y
Trace All Outputs? N
Trace Partial Outputs? N
Print Destination Balancing Statistics? N

Print Setup Summary? Y
Print File is N:\ITD95\KFUT2.TXT

"No Build Network with Future growth land use. Re-run with turn movements for all locations. - Revised for southern section of US95

END TIME IS 21:15:07 1/24/2001

TMODEL3 DISTRIBUTION & ASSIGNMENT RUN - MPA/UQP Version W.253
TMODEL3

TMODEL CORPORATION
VASHON ISLAND, WA

START TIME IS 20:13:17 1/24/2001

Distribution and Assignment file is N:\ITD95\KFUT3.DNA

Node Source file is N:\ITD95\KC036.NDE with 1218 Nodes
Node Delay Coefficients Source file is N:\ITD95\KC026.NDC with 99 Entries

Link Source file is N:\ITD95\KC036.LNX with 3894 Links
Link Delay Coefficients Source file is N:\ITD95\KC026.LDC with 11 Entries
Link Storage file is N:\ITD95\KFUT3.LLX

Turn Penalty file is N:\ITD95\KC034.TNP with 3854 Entries
Turn Penalty Type file is N:\ITD95\KC034.TPT with 2 Entries

Do you want Turn Movements ? Y
Turn Movements Source File is N:\ITD95\KC035.TRN with 14 Entries
Turn Movement Storage File is N:\ITD95\KFUT3.TRN

Travel Time Weight is .85 Travel Distance Weight is .15
Build and Use Vines

Save Incremental Travel Time Matrices ? N

Distribution and Assignment
Origin and Destination File is N:\ITD95\KCFUT3.OND with 191 Zones
Use Gravity Model Defaults? N
5 Trip Types, Consisting of Types : 1 2 3 4 5

Trip Types	Beta	Alpha	Constant
1	2.1	-.25	25
2	2.1	-.25	25
3	3.15	-.25	5
4	3.15	-.25	5
5	3.05	-.25	5

Number of Gravity Model Iterations is 10 with Maximum Deviation of .0001
Save Partial Trip Tables?N
Trip Table Storage file is N:\ITD95\KFUT3.TTB

Use Trip Table Input File? Y
Trip Table Input File is N:\ITD95\KCFUT2.TTI with 191 Zones
Incremental Loading with 10 Increments
Loading Increment 1 = .2
Loading Increment 2 = .1
Loading Increment 3 = .1
Loading Increment 4 = .1
Loading Increment 5 = .1
Loading Increment 6 = .1
Loading Increment 7 = .1
Loading Increment 8 = .1
Loading Increment 9 = .05
Loading Increment 10 = .05

Save Select Link Trip Table? N
Multi-Point Assignment Used with N:\ITD95\KC034.ZSQ with 745 Entries

Print Errors? Y
Trace All Outputs? N
Trace Partial Outputs? N
Print Destination Balancing Statistics? N

Print Setup Summary? Y
Print File is N:\ITD95\KFUT3.TXT

"No Build Network with Future growth land use. Re-run with turn movements for all locations. With land use reallocation - KCFUT3. Rerun with adjusted southern end of US95.

END TIME IS 21:13:43 1/24/2001

```
TMODEL3 DISTRIBUTION & ASSIGNMENT RUN - MPA/UQP Version W.253
TMODEL3

TMODEL CORPORATION
VASHON ISLAND, WA

START TIME IS 00:05:46  1/25/2001

Distribution and Assignment file is N:\ITD95\KFUT4.DNA

Node Source file is N:\ITD95\KFUT4.NDE with 1228 Nodes
Node Delay Coefficients Source file is N:\ITD95\KC026.NDC with 99 Entries

Link Source file is N:\ITD95\KFUT4.LNX with 3916 Links
Link Delay Coefficients Source file is N:\ITD95\KC026.LDC with 11 Entries
Link Storage file is N:\ITD95\KFUT4.LLX

Turn Penalty file is N:\ITD95\KFUT4.TNP with 3885 Entries
Turn Penalty Type file is N:\ITD95\KFUT4.TPT with 2 Entries

Do you want Turn Movements ? Y
Turn Movements Source File is N:\ITD95\KC035.TRN with 14 Entries
Turn Movement Storage File is N:\ITD95\KFUT4.TRN

Travel Time Weight is .85 Travel Distance Weight is .15
Build and Use Vines

Save Incremental Travel Time Matrices ? N

Distribution and Assignment
Origin and Destination File is N:\ITD95\KCFUT2.OND with 191 Zones
Use Gravity Model Defaults? N
5 Trip Types, Consisting of Types : 1  2  3  4  5

 Trip Types     Beta     Alpha  Constant
         1       2.1      -.25        25
         2       2.1      -.25        25
         3      3.15      -.25         5
         4      3.15      -.25         5
         5      3.05      -.25         5

Number of Gravity Model Iterations is 10 with Maximum Deviation of .0001
Save Partial Trip Tables?N
Trip Table Storage file is N:\ITD95\KFUT4.TTB

Use Trip Table Input File? Y
Trip Table Input File is N:\ITD95\KCFUT2.TTI with 191 Zones
Incremental Loading with 10 Increments
Loading Increment 1 = .2
Loading Increment 2 = .1
Loading Increment 3 = .1
Loading Increment 4 = .1
Loading Increment 5 = .1
Loading Increment 6 = .1
Loading Increment 7 = .1
Loading Increment 8 = .1
Loading Increment 9 = .05
Loading Increment 10 = .05

Save Select Link Trip Table? N
Multi-Point Assignment Used with N:\ITD95\KC034.ZSQ with 745 Entries

Print Errors? Y
Trace All Outputs? N
Trace Partial Outputs? N
Print Destination Balancing Statistics? N
```



```
Print Setup Summary? Y
Print File is N:\ITD95\KFUT4.TXT

"STIP plus Local  Street Capacity Improvements with Future growth land use. Re-ru
n with turn movements for all locations.

END TIME IS 00:24:44  1/25/2001
```

TMODEL3 DISTRIBUTION & ASSIGNMENT RUN - MPA/UQP Version W.253
TMODEL3

TMODEL CORPORATION
VASHON ISLAND, WA

START TIME IS 16:30:45 4/21/2001

Distribution and Assignment file is N:\ITD95\KFUT5.DNA

Node Source file is N:\ITD95\KFUT5.NDE with 1269 Nodes
Node Delay Coefficients Source file is N:\ITD95\KC026.NDC with 99 Entries

Link Source file is N:\ITD95\KFUT5.LNX with 3977 Links
Link Delay Coefficients Source file is N:\ITD95\KC026.LDC with 11 Entries
Link Storage file is N:\ITD95\KFUT5.LLX

Turn Penalty file is N:\ITD95\KFUT5.TNP with 3890 Entries
Turn Penalty Type file is N:\ITD95\KFUT5.TPT with 2 Entries

Do you want Turn Movements ? Y
Turn Movements Source File is N:\ITD95\KFUT5B.TRN with 14 Entries
Turn Movement Storage File is N:\ITD95\KFUT5.TRN

Travel Time Weight is .85 Travel Distance Weight is .15
Build and Use Vines

Save Incremental Travel Time Matrices ? N

Distribution and Assignment
Origin and Destination File is N:\ITD95\KCFUT2.OND with 191 Zones
Use Gravity Model Defaults? N
5 Trip Types, Consisting of Types : 1 2 3 4 5

Trip Types	Beta	Alpha	Constant
1	2.1	-.25	25
2	2.1	-.25	25
3	3.15	-.25	5
4	3.15	-.25	5
5	3.05	-.25	5

Number of Gravity Model Iterations is 10 with Maximum Deviation of .0001
Save Partial Trip Tables?N
Trip Table Storage file is N:\ITD95\KFUT5.TTB

Use Trip Table Input File? Y
Trip Table Input File is N:\ITD95\KCFUT2.TTI with 191 Zones
Incremental Loading with 10 Increments
Loading Increment 1 = .2
Loading Increment 2 = .1
Loading Increment 3 = .1
Loading Increment 4 = .1
Loading Increment 5 = .1
Loading Increment 6 = .1
Loading Increment 7 = .1
Loading Increment 8 = .1
Loading Increment 9 = .05
Loading Increment 10 = .05

Save Select Link Trip Table? N
Multi-Point Assignment Used with N:\ITD95\KFUT5.ZSQ with 742 Entries

Print Errors? Y
Trace All Outputs? N
Trace Partial Outputs? N
Print Destination Balancing Statistics? N

Print Setup Summary? Y
Print File is N:\ITD95\KFUT5.TXT

*Huetter Road Alternate with Future growth land use. Run with turn movements for all locations.

END TIME IS 16:50:32 4/21/2001

```
TMODEL3 DISTRIBUTION & ASSIGNMENT RUN - MPA/UQP Version W.254
TMODEL3

TMODEL CORPORATION
VASHON ISLAND, WA

START TIME IS 00:50:13  5/16/2001

Distribution and Assignment file is N:\ITD95\KFUT6.DNA

Node Source file is N:\ITD95\KFUT6.NDE with 1284 Nodes
Node Delay Coefficients Source file is N:\ITD95\KC026.NDC with 99 Entries

Link Source file is N:\ITD95\KFUT6.LNX with 3993 Links
Link Delay Coefficients Source file is N:\ITD95\KC026.LDC with 11 Entries
Link Storage file is N:\ITD95\KFUT6.LLX

Turn Penalty file is N:\ITD95\KFUT6.TNP with 3866 Entries
Turn Penalty Type file is N:\ITD95\KFUT6.TPT with 2 Entries

Do you want Turn Movements ? N

Travel Time Weight is .85 Travel Distance Weight is .15
Build and Use Vines

Save Incremental Travel Time Matrices ? N

Distribution and Assignment
Origin and Destination File is N:\ITD95\KCFUT2.OND with 191 Zones
Use Gravity Model Defaults? N
5 Trip Types, Consisting of Types : 1  2  3  4  5

 Trip Types      Beta     Alpha  Constant
         1        2.1      -.25        25
         2        2.1      -.25        25
         3       3.15      -.25         5
         4       3.15      -.25         5
         5       3.05      -.25         5

Number of Gravity Model Iterations is 10 with Maximum Deviation of .0001
Save Partial Trip Tables?N
Trip Table Storage file is N:\ITD95\KFUT6.TTB

Use Trip Table Input File? Y
Trip Table Input File is N:\ITD95\KCFUT2.TTI with 191 Zones
Incremental Loading with 10 Increments
Loading Increment 1 = .2
Loading Increment 2 = .1
Loading Increment 3 = .1
Loading Increment 4 = .1
Loading Increment 5 = .1
Loading Increment 6 = .1
Loading Increment 7 = .1
Loading Increment 8 = .1
Loading Increment 9 = .05
Loading Increment 10 = .05

Save Select Link Trip Table? Y
Select Link Trip Table file is N:\ITD95\KFUT6.SLT
Select Link Origin Node = 1239
Select Link Destination Node = 1237
Multi-Point Assignment Used with N:\ITD95\KFUT6.ZSQ with 742 Entries

Print Errors? Y
Trace All Outputs? N
Trace Partial Outputs? N
```



```
Print Destination Balancing Statistics? N
Print Setup Summary? Y
Print File is N:\ITD95\KFUT6.TXT

*US95 Expressway.

END TIME IS 01:09:06  5/16/2001
```

TMODEL3 DISTRIBUTION & ASSIGNMENT RUN - MPA/UQP Version W.254
TMODEL3

TMODEL CORPORATION
VASHON ISLAND, WA

START TIME IS 19:12:00 6/21/2001

Distribution and Assignment file is N:\ITD95\KSTIP1.DNA

Node Source file is N:\ITD95\KSTIP1.NDE with 1219 Nodes
Node Delay Coefficients Source file is N:\ITD95\KC026.NDC with 99 Entries

Link Source file is N:\ITD95\KSTIP1.LNX with 3896 Links
Link Delay Coefficients Source file is N:\ITD95\KC026.LDC with 11 Entries
Link Storage file is N:\ITD95\KSTIP1.LLX

Turn Penalty file is N:\ITD95\KSTIP.TNP with 3854 Entries
Turn Penalty Type file is N:\ITD95\KSTIP.TPT with 2 Entries

Do you want Turn Movements ? Y
Turn Movements Source File is N:\ITD95\KC035.TRN with 14 Entries
Turn Movement Storage File is N:\ITD95\KSTIP1.TRN

Travel Time Weight is .85 Travel Distance Weight is .15
Build and Use Vines

Save Incremental Travel Time Matrices ? N

Distribution and Assignment
Origin and Destination File is N:\ITD95\KCFUT2.OND with 191 Zones
Use Gravity Model Defaults? N
5 Trip Types, Consisting of Types : 1 2 3 4 5

Trip Types	Beta	Alpha	Constant
1	2.1	-.25	25
2	2.1	-.25	25
3	3.15	-.25	5
4	3.15	-.25	5
5	3.05	-.25	5

Number of Gravity Model Iterations is 10 with Maximum Deviation of .0001
Save Partial Trip Tables?N
Trip Table Storage file is N:\ITD95\KSTIP1.TTB

Use Trip Table Input File? Y
Trip Table Input File is N:\ITD95\KCFUT2.TTI with 191 Zones
Incremental Loading with 10 Increments
Loading Increment 1 = .2
Loading Increment 2 = .1
Loading Increment 3 = .1
Loading Increment 4 = .1
Loading Increment 5 = .1
Loading Increment 6 = .1
Loading Increment 7 = .1
Loading Increment 8 = .1
Loading Increment 9 = .05
Loading Increment 10 = .05

Save Select Link Trip Table? N
Multi-Point Assignment Used with N:\ITD95\KC034.ZSQ with 745 Entries

Print Errors? Y
Trace All Outputs? N
Trace Partial Outputs? N
Print Destination Balancing Statistics? N

Print Setup Summary? Y
Print File is N:\ITD95\KSTIP1.TXT

"STIP with Future growth land use. With turn movements for all locations.

END TIME IS 19:31:08 6/21/2001